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JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SEVENTIETH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN CLEVELAND, OHIO, 1922.

The 1922 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Cleveland during Convention Week

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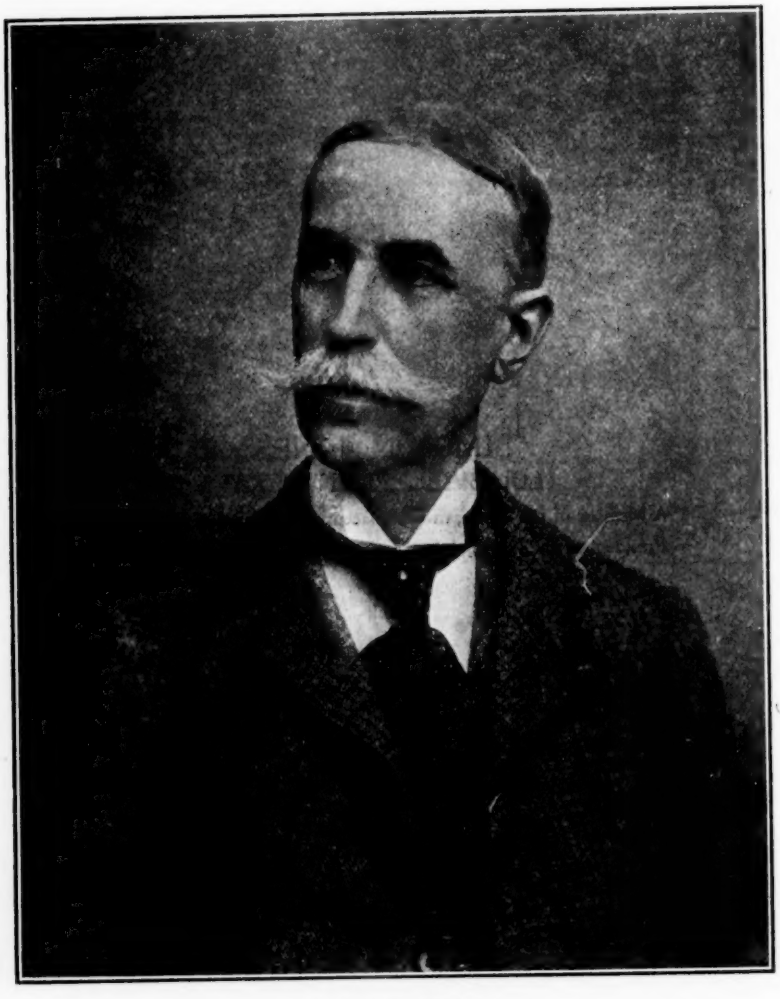
President of the National Association of Retail Druggists in 1889



SIMON N. JONES

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. X SEPTEMBER 1921 NO. 9

SIMON NEWTON JONES.

Life members of the American Pharmaceutical Association link the present with the past, the history of states and municipalities, as well as that of American pharmacy and the drug business—the passing of the Apothecary shop, the development of the modern pharmacy, and coming of the present era drug store. Some of the pharmacists who witnessed the going and the coming joined whole-heartedly in directing the movements, and one of the results was the formation of the National Association of Retail Druggists. Recently the records of one of our most active members, who presided over the initial meeting of the latter organization, were closed; the second president, Simon Newton Jones, of Louisville, Ky., joined the American Pharmaceutical Association in 1870.

In an address delivered as president of the Louisville College of Pharmacy, a few years ago, Mr. Jones brought in some interesting personal references, and these emphasize the opening lines of this sketch. He spoke of his entrance into the drug business, during the 60's; only two druggists then actively engaged in the drug business, in Louisville, were living at the time the address referred to was delivered. The names of active members in the Association were recalled; among them in the 1870 list with him were: C. Lewis Diehl, James E. Brown, George H. Carey, Emil Scheffer, Thomas E. Jenkins, George A. Newman, Ferdinand J. Pfingst, and others.

Mr. Jones entered the drug business, in Louisville, in 1868. The fact that General Humphrey Marshall was his first customer is of historical interest on account of his patron's eventful life; that the late Silas N. Burroughs, then representative of an American pharmaceutical house and afterward one of the founders of an English establishment, delivered the goods, by basket, for which he solicited orders, indicates the development of pharmaceutical manufacturing, and recalls a striking instance of young men "going East," and also periods in the life of Mr. Burroughs, who was a member of the American Pharmaceutical Association.

The prime reason for presenting this brief sketch of our beloved veteran member is the fact of his having passed the fiftieth milestone in his A. Ph. A. mem-

bership; however, the Association to which he also gave many years of faithful service meets in Denver this month, and to that extent this is an expression of fraternity. In 1888 Mr. Jones was elected second vice-president of the National Association of Retail Druggists, and to the presidency at the next annual convention; after the expiration of his term of office he was elected successively, each year, member of the executive committee and also served as chairman during the same period, until in 1909 he asked to be relieved from this work. At the New Orleans meeting, in 1918, he was elected an honorary life member of the N. A. R. D., by the unanimous vote of the convention.

Our fellow-member is an optimist. He has said of himself: "This world has been good to me; I have been surrounded by friends whose friendship I have enjoyed and appreciated." Drawing on his life for closing words:—He graced and honored the offices to which he was chosen; he endeavored to infuse the spirit of "Live, and let live;" his labors in advancing pharmacy were unselfishly given that others might share the benefits of its promotion.

"Time on his head has snowed, yet still 'tis borne aloft."

E. G. E.

THE NEW ORLEANS MEETING.

THE annual meeting of the American Pharmaceutical Association has interfered with the preparation of an editorial for this issue; instead, and of particular interest at this time, the address of President Packard is printed on the pages following. Truly, a president's address is more or less of an editorial; it expresses his views of what will benefit the Association most, best serve pharmacy, in conformity with the objects of the organization.

Comment on the address was reserved for the members in convention at New Orleans. Matters of considerable importance were subjects of discussion and arrangement, which included the question of dues; the conclusions were that conditions warranted a continuance of the present rate of $5.00 per annum. At the last convention Treasurer H. M. Whelpley was persuaded to serve another year; recently he gave formal notice that he could not again stand for re-election, for this, the most important office of the Association from a number of viewpoints; Prof. E. F. Kelly of Baltimore was elected, and his term of office begins January 1, 1922. The closely related organizations are deeply interested in the advancement of pharmaceutical education and, while always timely as a topic for discussion, has this year, if possible, a greater significance.

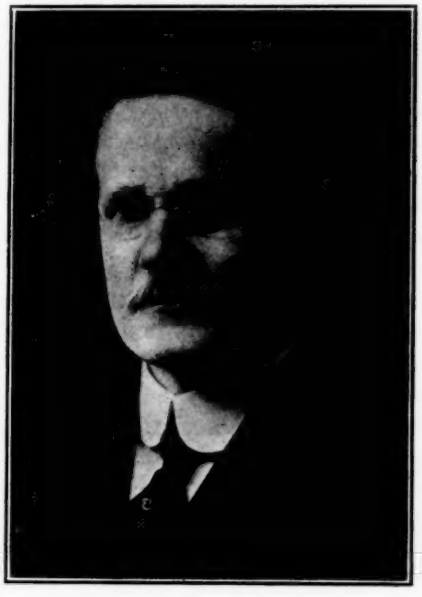
After discussing the Endowment Fund in his address, President Packard asked for volunteer subscriptions; about $650.00 was added to this fund; a list of the contributors will appear in next issue of the Journal. He also secured the aid of a committee, composed of brides in attendance, who by sale of carnations added about $75.00 to the Ebert Prize Fund.

A number of papers presented at the New Orleans meeting of the American Pharmaceutical Association are printed in this issue; the minutes of the General Sessions will appear in the October number. E. G. E.

PRESIDENTIAL ADDRESS OF C. HERBERT PACKARD, PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1920–1921.

The purpose of this annual address of the President of the American Pharmaceutical Association, as I understand it, is not to speak of all the changes, nor to gather and give statistics concerning the work of the Association or the progress of pharmacy in the United States. Rather has the Association laid upon the person elected to this task the duty of stating each year his own point of view dealing with those subjects which at the time seem to be necessary and significant.

I am reminded at this time of a story recently published in one of our current magazines, of a Massachusetts man famed for his dry humor who had never taken a sea trip. Having conceived the idea of making a real voyage, he sailed one day from Boston in a small schooner. The first day out a storm was encountered and the old gentleman became violently sick, but after a few hours he mustered up courage and strength to look out upon the troubled waters.



PRESIDENT C. H. PACKARD

As he gazed from the side of the little vessel upon the trough of the sea, it seemed very smooth to him. The Captain's cutting of the waves was senseless, he felt sure. But as the mad steering continued, the unhappy passenger crawled out on hands and knees to where the captain stood at the wheel, and raising his voice above the din of the waves and wind, shouted,—"Man, keep in the ruts, keep in the ruts."

You will admit that many of us to-day find ourselves if not in the same berth at least in the same boat with the estimable gentleman of the story. The American Pharmaceutical Association, as any other association of thoughtful men, must have certain defined policies, certain methods of procedure or program to accomplish its work, much as a master mariner has his sailing orders, charts and compass, ports of call, and final haven. But the conditions we face daily are as surely influx as the wastes of water under his keel. Business conditions, social, professional, and educational standards change as often and as suddenly as the winds which fill his sails.

He must be blind indeed who cannot see that the ambitions of men to-day have taken on a titanic quality. Financial and economic enterprises are world-wide in their outreach. Social programs and the pursuit of social ideals concern not our own country alone but many nations and are changing the face of the world.

Every profession is sharing in this enlarged vision of positive and possible

achievement, and certain callings which yesterday had no part in such things are taking prominent places as servants of the public good.

In view of the great material progress of our time, the discovery and wide use of new materials and appliances; in view of the wonderful progress through the influx of all sorts of new facts in every department of knowledge which has widened our horizon, and given us new and undreamed-of contacts; we must while holding fast to the best ideals current in our profession, see that those ideals reach up to the standards that the state of our times demands.

Any changes of our course toward the harbor of high efficiency in pharmacy must be carefully considered and such wise adjustment made as shall carry captain, crew and cargo to the desired haven. Only the land-lubbers of our profession at this time cry, "Keep to the ruts."

If in our proceedings of other years we have seemed to keep to old channels, it is because they have proved safe and sure. If to-day or in the future we venture into unknown waters it is because the spirit of adventure by which new worlds are discovered is abroad. Such a spirit does not spell disaster. All kinds of craft sail waters of the world. The master mariner keeps his *mind* on the chart and the goal, his *eyes* on the sea and sky, his hands on the wheel and momentarily adjusts his course. It is this constant adjustment to conditions that will make this Association what it should be.

The very existence of our Association calls to public attention the wide and many ramifications of what we call the scientific profession of pharmacy. A glance at the number of subjects which annually engross the attention of the members in each department or section shows the immediate and powerful relation we hold to much that is vital in our national life, second only to that of the profession of medicine.

A careful study of the aims of the Association, as set forth so concisely on our membership blanks, proves how intimate is our relation to the well-being of the nation and how much we owe to those whose recognition of those relations made the formation of this Association both necessary and possible.

By the same vision, enthusiasm, patience and persistence by which this Association was brought into existence and continued with an ever-broadening and more powerful conception of its purposes, must it advance along lines which will make it an instrument for the highest type of service.

UNITED STATES PHARMACOPOEIA.

Since our last meeting work on a new Pharmacopoeia has been started and the committee seems to be, is in fact, imbued with the spirit of the times, and the work is progressing much more rapidly than that of the last edition. Never before has a group of men worked together so harmoniously and single-mindedly. With a very able and energetic chairman, and a group of remarkably able and efficient chairmen of sub-committees, the absence of discord or division between the medical and pharmaceutical groups, we have much to expect.

It is very gratifying to know that the medical group fully recognize that the greatest part of the work of revision falls upon the pharmaceutical group and are only desirous of seeing that the United States Pharmacopoeia reflects the best

medical practice, which is also the point of view of the pharmaceutical members.

This revision will represent more and more a common meeting ground for both professions to the advantage of each.

NATIONAL FORMULARY.

The increasing use and importance of the National Formulary is most gratifying. The American Pharmaceutical Association is to be congratulated on having such earnest, loyal members who give to the Association, and to the profession of pharmacy, so much of their time with the resulting excellent work.

Judging from the aims and activities of the Revision Committee of the National Formulary, I believe the coming edition will be of far greater value and broader service than any previous issue.

The securing of the coöperation of the National Dental and National Veterinary Associations in selecting dental and veterinary formulas, adds two classes of preparations of real practical value.

The addition of the amount of active constituent in each dose of a preparation will be found desirable. Also the table of all official articles, including those in the Pharmacopoeia, showing into what preparations in both Pharmacopoeia and National Formulary each article enters, will give this publication a new value to both physicians and pharmacists.

Another point of interest to the retail pharmacist is the fact that the Committee is studying more than ever economic and commercial conditions, with a view to making the next Formulary a work of greater practical value to the average pharmacist than any preceding one, realizing, as they do, that to insure the legal value of the Formulary *to all* the pharmacists of the country it must meet their requirements.

It is gratifying to learn that the work of revision is going on very rapidly and it is expected that the time necessary to complete the issue will be much shorter than that of preceding editions.

MEMBERSHIP.

The General Committee on Membership has been steadily at work and very successfully as shown by the increase in the number of members.

The gain in percentage is not large but it shows a healthy growth and one fully as large as can be expected under the present policies of our Association.

The greatest need of our Association is to have a much larger membership, but this cannot be unless a very unusual amount of personal work is done by the present members. Steps should constantly be taken to bring the desirability and advantage of membership to the attention of every pharmacist in the country.

It is with profound regret that I announce the decease of 51 members since the last annual meeting. Many of these gave unstintingly of their time and wise counsel to this Association—their presence and voices will ever be missed by us.

Out of respect and in memory of them, let us rise—and stand in silent thought, while the Secretary reads the names of the deceased members 1920–1921.

DUES.

Although voting for an increase in the amount of dues to $7.50 I am quite aware of the fact that such action will greatly reduce our numbers and retard the growth of our membership.

Other suggestions were made last year, if I remember correctly, that the dues be $5.00, and another, $6.00 including the monthly JOURNAL and that those wanting the YEAR BOOK pay $3.00 extra.

This would undoubtedly net the Association the most money and we need both money and members to carry on the work. Nevertheless, I do not favor either plan, for the result would be a great reduction in the number of volumes issued of the YEAR BOOK.

This ought not to be, for this publication is too much a part of the real work of the Association, a magnificent contribution to pharmacy, and should be in the hands of every pharmacist.

Inasmuch as the printing of the YEAR BOOK is the largest item of expense, and that the prices in this line have dropped 10 percent, with conditions pointing to still further reduction, I suggest that the vote whereby the dues were fixed at $7.50 be reconsidered. I suggest further that the dues be $5.00 to include the monthly JOURNAL and a charge of $1.00 be added for the YEAR BOOK.

The following plans will give you an idea of how this matter works itself out:

Plan No. 1 as it begins with the vote of $7.50 and the YEAR BOOK free: Thirty-five hundred members paying $7.50 for annual dues brings $26,250; deduct $6500, estimated cost of YEAR BOOK, leaves $19,750; deduct for loss of members, estimated loss 700 at $7.50, leaves $14,500. A fair income—a loss of many members and, surely, fewer new members.

Plan No. 2, with dues $6.00 and YEAR BOOK $3.00 extra; thirty-five hundred members paying $6.00 dues, yield $21,000; deduct estimated cost of 748 copies of the YEAR BOOK, $2,500, leaves $18,500; estimated loss of 300 members at $6.00 equals $800 to be deducted, leaves $16,700 and receipts from the sale of 500 copies of the YEAR BOOK at $3.00 to be added nets $18,200.

A large income but a poor policy in cutting down the output of the YEAR BOOK to such a small number, also much less chance to obtain new members because of the increase of dues from $5.00 to $6.00.

Plan No. 3, with dues $5.00 and YEAR BOOK $3.00 extra: Thirty-five hundred members, paying $5.00 dues bring $17,500, cost of 748 YEAR BOOKS, estimated to be deducted, $2,500, leaves $15,000; add $1500 from sales of 500 copies of the YEAR BOOK, produces $16,500.

A good income but again a loss to the Association in several ways by issuing so few YEAR BOOKS.

Plan No. 4, dues $5.00 and YEAR BOOK $1.00 extra: Thirty-five hundred members, paying $5.00, yield $17,500, sale of 2,800 YEAR BOOKS, estimating that 700 members do not want them, brings $2,800, and $5,190 to be deducted, estimated cost of 3000 YEAR BOOKS, leaves a total of $15,110.

A fair income with large distribution of YEAR BOOKS.

If 1500 members, instead of 700, did not wish to purchase the YEAR BOOK then the return would be about $15,700.

This would give between four and five thousand dollars more income than the old dues of $5.00, JOURNAL and YEAR BOOK free.

It would furnish a thousand dollars more income than plan No. 1, our vote of $7.50 dues, and YEAR BOOK free.

Besides the $1000.00 more income, there would probably be a steady growth in membership and a large distribution of the YEAR BOOK, and this publication is too valuable a book not to be distributed to as many pharmacists as possible.

With adequate notices in the pharmaceutical press, drawing attention to the volume as a book of reference, its real worth would quickly be recognized. This

book has been received by too many as a gift and of little value, only to be accepted as such and forgotten.

Where would the pharmacist look for the latest reference to chemical or preparation? Not in the Pharmacopoeia, not in the National Formulary, but in the YEAR BOOK. It should therefore be on every pharmacist's desk beside the Pharmacopoeia and the National Formulary, and would be, if they were once impressed with its value, enough to thoroughly examine it.

Inasmuch as the vote of the A. Ph. A. members turned out to be—655 for $7.50 for dues with the YEAR BOOK, 474 for dues at $5.00 without the YEAR BOOK, and 1871 not voting, I believe it would be well to test the desirability of the YEAR BOOK by plan No. 4: Dues $5.00 and the nominal charge of $1.00 for the YEAR BOOK, which would be within the reach of all. If the result should be that a large majority wanted the YEAR BOOK, I would be in favor of a flat rate for dues and YEAR BOOK the following year, for the reason—that it would entail a lot of work to carry an account of those wanting and those not wanting the book, and an uncertain problem of how large a number should be printed each year. Therefore—dues to include the JOURNAL and the YEAR BOOK would be more desirable providing the *test* showed that the *majority* wanted it.

HOSPITAL PHARMACISTS.

There is a particular group of pharmacists whose definite line of work makes them especially eligible to membership in this Association. I refer to the large number of hospital pharmacists.

There are in the whole country over 6000 hospitals; probably over 500 of these employ pharmacists. The hospital service throughout the United States is greatly on the increase, both in the number of new institutions and the constant enlargement of present plants.

I believe there should be a very special survey of this field and a strong effort made to enlist the support and coöperation of this group in the Association. The exacting and responsible nature of their service, together with the fact that it is so largely along strictly professional lines, would create within the Association a strong body of the special type of pharmacist which is most desirable to add to our membership.

I would advise that every effort be made to win these men and women, and give them an adequate recognition by a place in a special group. The work they are doing in the large centers gives them opportunity for very constructive and practical advancement of pharmacy that should be recognized by this Association.

I recommend that a Hospital Pharmacists' Committee be created and given a part in the program of the Section on Practical Pharmacy and Dispensing.

THE ASSOCIATION FUNDS.

After perusing the funds of the Association it is very evident that they were established by earnest, loyal members whose hearts were in the work and who not only believed in the Association for the uplift of pharmacy for the present, but also for the future.

They have laid a great foundation and we of to-day should be so inspired by their wisdom and work, that we should feel it incumbent upon us to force the growth

of these funds, for use in the great work this Association has at hand and will have in the years to come.

To enlarge these funds means a larger income to work with; greater name and influence; further, the larger the income the smaller the dues. With a greater work performed, a greater name and influence, the matter of membership for support of this Association would not take up our time as it does to-day.

It therefore seems very necessary to put more earnest work behind our funds, réal earnestness with lots of punch. The men who established these funds had great forethought for the future of this Association; the faster the funds grow the quicker the day will come when we may and shall use the incomes for the benefit of this Association, for the benefit of all pharmacy, for the benefit of the world.

The Life Membership Fund has reached an amount which is quite an asset to the Association and by the addition of a new member, once in a while, will amount to a large sum in a few years, providing it remains as in the past, interest-accruing. Income only of this fund can be used.

The A. Ph. A. Centennial Fund was established for the purpose of aiding in the prosecution of original investigations, the interest of the fund to be used in defraying the expenses incurred by members in conducting investigations, in some branch of science connected with pharmacy.

This fund amounted to $3557.00, January 1, 1921. The interest on this amount will not stimulate investigation requiring a large outlay. A small fund, an inactive fund, does not inspire. A large fund, a growing fund, does stimulate, will help investigation, yes, indirectly helps membership.

The A. Ph. A. Research Fund is another fund showing a wise and thoughtful act to furnish an income not only for the present, but for future needs. I suggest that a committee be appointed to make a strong effort to increase this fund.

The A. Ph. A. Endowment Fund was started in 1906 by Messrs. James H. Beal and S. A. D. Sheppard. They jointly agreed to pay into this fund one dollar for each 20 dollars contributed or paid into this fund by all other members of this Association up to and until such endowment fund shall, with its accumulations of interest, reach the sum of $25,000.

When the fund reaches this amount one-half of the income can be used by the Association; when it has reached $50,000, the Association can use 90 percent of the income; under no circumstances can all the income be used, at least 10 percent must be added to the principal. What excellent conditions, how solid a fund for the future of the Association. But, gentlemen, it is growing too slowly, especially when you think of the numbers of earnest and enthusiastic members who meet in convention every year. One of the gentlemen who proposed and established this fund has passed away—Mr. S. A. D. Sheppard—and I will gladly take up his share of the offer to give one dollar for each twenty dollars contributed by all other members of the Association up to $25,000, if our esteemed member, Dr. James H. Beal, will accept me as a contributing partner.

I do not make this offer to draw attention to myself but for the purpose of increasing a fund which will mean so much to our Association, and the smallest thing it will mean is new members. It pleases me also to mal this offer because Mr. Sheppard, who gave of his very life to this Association, was a dear friend of

mine for many years. I will mention two of the many incidents I could speak of.

When I graduated from the Massachusetts College of Pharmacy Mr. Sheppard was its president and conferred the degree upon me; 25 years later it was my good privilege to suggest and confer an honorary degree upon him, and, gentlemen, I wish you could have seen and heard him when he spoke after receiving the degree. It was with that earnest, quick snappy way with flashing eye that many of you remember. When I think of his earnestness it makes me feel like pushing the work he and others began.

Gentlemen, you and I must push the work; we can make a start now, there is no time like the present.* I suggest a committee be appointed to increase this fund.

The Ebert Prize Fund.—Mr. Albert E. Ebert presented to the Association the sum of $500, the interest thereof to be used as a suitable prize for the best essay or written contribution containing an original investigation of a medicinal substance, determining new properties, or containing other meritorious contributions to knowledge; or for improved methods of determining merit, for the preparation of chemical or pharmacal products.

Albert Ethelbert Ebert joined the A. Ph. A. in 1864; was its president in 1872–1873. He was a delegate to the International Pharmaceutical Conference held in Paris in 1867 and to the British Pharmaceutical Conference held the same year; a member of the Revision Committee of the U. S. P. in 1870, vice-president of the Committee in 1900, and member of the Board of Trustees and professor of pharmacy for many years at the Chicago College of Pharmacy. He graduated from the Philadelphia College of Pharmacy in 1864 and later received the honorary degree of Master of Pharmacy. In 1868 he received the degree of Doctor of Philosophy at the University of Munich.

The last words spoken by Mr. Ebert were, "The American Pharmaceutical Association, it was my life; it gave me a profession."

I suggest that we so mention the Ebert Prize in the press from time to time that it will be more and more sought after, for the honor its name bears.

I also suggest that a committee be appointed to increase this fund, so that it will soon be a more appreciable amount, believing that an amount can be added in lieu of larger interest, without changing the intent of the maker of the fund.*

I should like to see this fund grow because no matter how much honor goes with the prize, money is sometimes needed to start the work, and if none is in view, the idea or work is not developed. The income of this fund is very small at present, and I believe to better carry out the intent of the giver in the line of progress, larger prize money would be a stimulant to greater work, for the reason that there are many men who from their love of the work, to investigate, invent, etc., would do so, but are discouraged by the cost of materials or apparatus, feeling that the large or small salary or income they receive is due their family. The Ebert Prize Fund amounts to $1262.00.

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* President Packard asked for volunteer subscriptions, and about $650.00 was contributed; names of subscribers will be printed in October JOURNAL. He enlisted the support of a Ladies' Committee who by sale of flowers added about $75.00 to this fund. See also page 654.

Our worthy treasurer will give in the regular order of business the condition of these and all other funds of the Association.

I must at this time say a few words in appreciation of the fact that our treasurer will show a very gratifying condition in the financial affairs of the Association, notwithstanding the high costs which have prevailed.

Great credit is due the treasurer for his unremitting labor in following up delinquents and much has been saved to the Association by these efforts. The careful and wise investing by him makes our funds secure.

It is with sincere regret that I learn that Dr. Whelpley will positively not accept a re-election as treasurer of our Association. It will be difficult to find a man who will so ably perform the work of this office. His has always been an intense interest in matters, not only connected with the treasury but in the welfare of the whole Association, which he has so well helped to frame and guide, for this and future generations.

THE PRE-REQUISITE IN PHARMACY.

We have often expressed the opinion that pharmacists should not only be well versed in the lore of their craft, but that as a class they should be intellectually above the average. This was never more true than at the present time. It is highly desirable, therefore, that high school and college education should be preliminary preparation to technical professional study in pharmacy.

We must concede that this demand for extended preliminary preparation, perhaps, extends the time of unproductive years unduly. Pharmaceutical knowledge is much more extensive than it was even a few years ago and a more extended course of study is unavoidable. This is true of every walk in life. All callings are demanding of their followers more learning and harder work to fit themselves for the requirements of the present time.

There is scarcely any profession or business to-day that does not find a larger percentage of well-trained men in its ranks than there were, even, ten years ago. This has resulted because of the increased opportunities for young people to get what schooling and training they need, both in preliminary and professional lines. This is especially true in certain sections of our country where the state has recognized its great obligation of educating its citizenship. In other sections of the country, scholarships, fellowships, private endowments, and opportunities for earning make it possible for those with initiative and energy to fight their way to professional and commercial success.

In the past, many practitioners of the various professions received their training by the apprenticeship method, but this system has been very largely superseded, as the educational facilities of the country have developed, so that physicians, dentists, lawyers, architects, engineers and members of other professions now receive their scientific training in regularly organized schools and are almost invariably required to graduate from such a school before being admitted to the practice of a profession.

This is the trend of the times and makes for progress. Pharmacy cannot lag behind in this modern and necessary development. In the absence of a national pharmacy law, the practice of pharmacy is regulated by statutes of the separate states, and eighteen of the states now require graduation from a recognized school

of pharmacy as a pre-requisite to the examination for license as a pharmacist. If such a pre-requisite is necessary in dentistry, for example, it is fully as necessary in pharmacy.

I recommend that the Association continue its efforts to bring the remaining states into line and suggest that this topic be one to be given by the Executive Committee, to the Local A. Ph. A. Branches, as a special order of business for one or more meetings during the coming year.

In connection with this subject, it may be remarked that our coördinate organizations, the American Conference of Pharmaceutical Faculties, the National Association of Boards of Pharmacy, and the Pharmaceutical Syllabus Committee are successfully performing a useful duty in standardizing the courses in schools of pharmacy and the examinations by state boards of pharmacy.

TRAINING IN COMMERCIAL PHARMACY.

During the past few years there has been an insistent demand for more and better teaching of business methods in colleges of pharmacy. The colleges must yield to this demand, if they are to serve pharmacy in fullest measure, but it will be necessary to develop the methods by which this additional work can best be done.

The present minimum course leading to the degree of Graduate in Pharmacy is designed to give the scientific training necessary for the practice of pharmacy, and this is required for the protection of the public. Training in commercial pharmacy has little or no place in such a course, and it does not appear that the short treatment of the subject given by some of the colleges of pharmacy as a part of the general course has been successful; the two kinds of work seem to be incompatible.

What is needed is a separate course in business training for pharmacists along the lines of the graduate courses in business now offered by many of the large universities. In such a course, the student learns by doing the things studied, instead of listening to lecturers talk about them.

At least one college of pharmacy is inaugurating such a course and the experiment should be watched with interest. Being an entirely separate course, its success or failure can be seen clearly and, if successful, it may point the way to a solution of this pressing problem.

THE EIGHTEENTH AMENDMENT.

It is not necessary for me here to present facts or to accumulate evidence of the countless benefits that have come to the country through the effort to abolish the liquor traffic in the United States.

Disapproval, for whatever reason, of the Eighteenth Amendment, or the so-called Volstead Act, or any doubt of the wisdom of its passage, cannot justify any pharmacist in ignoring its provisions or violating its conditions. Those who have done so for profit, or have been lax or careless, deserve nothing but contempt, for they have not only degraded themselves but have brought shame on the whole profession.

We are under no less obligation to carry out the provisions of a law we consider unjust, than of one we heartily approve. As a part of the Constitution and

law of the land we must as good citizens obey the law absolutely. In addition, every honest man owes it to himself and his profession to carry out the regulation concerning the use of alcohol in the most careful and scrupulous manner.

Loyalty to the Government and recognition and obedience of the law ought not to be a difficult matter when only twenty-two percent of the physicians of the country have taken out permits to prescribe whisky, and the large majority of the profession is to be found in what are called wholly dry states. Moreover it would be increasingly difficult to evade the law, if we steadfastly resisted the attempts which have already been made by legal rulings to foist upon our profession the disagreeable task of quenching the thirst of those who have lost all perception of the rights of the majority in our democracy, as well as all wish to be law-abiding citizens.

The medical profession is definitely on record against the use of liquors and narcotics, indiscriminately, by the people and, unwisely, by the profession. In some instances, the most progressive of their number have declared alcoholic beverages to have no therapeutic value. Those who advocate any degree of return to former conditions are in the unprogressive section of the profession and simply voice warped views.

Why should not the American Pharmaceutical Association go on record with the American Medical Association and stand on a platform of national and self-control, good government, good citizenship, patriotism and true Americanism by helping enforce the present law?

I so recommend.

Furthermore, I recommend that this Association give its hearty support to the movement for the establishment of Government Agencies for handling alcoholic liquors, thereby removing the stigma which is the result of the present regulations.

METRIC STANDARDIZATION OF WEIGHTS AND MEASURES.

Much has been said upon this subject and I will be brief.

The principal advantages of the metric system are summed up in the fact that this is the only system which has a purely scientific basis and gives facility to calculations of all kinds, from the simplest to the most complex.

The adoption of the metric system would greatly facilitate intercourse and trade with other countries.

A common system of weights and measures is in a sense a universal language; a chance system cannot be universal. Science is universal; therefore what is produced by science may find a home everywhere.

What an advantage we have over the system of pounds, shillings and pence in our decimal dollar. It would be equally advantageous if we had the metric system of weights and measures.

Shall we not adjust ourselves to the requirements of progress?

I recommend that we favor and urge metric standardization in the United States; and that the secretary forward such action to the World Trade Club at San Francisco.

PHARMACEUTICAL RESEARCH.

An important topic for our thought at this time is pharmaceutical research.

That research is fundamental in the science of pharmacy is self-evident since no science progresses unless some of its followers add their portion of experience to the sum of human knowledge.

The direction of future professional opinion in pharmaceutical affairs can best be influenced by a systematic investigation along all lines which deal directly and indirectly with pharmacy.

Such systematic investigation, and intelligent and orderly recording of results, in my opinion constitutes pharmaceutical research. That research, like culture, should become an unpopular term arises from abuse, as well as lack of clear definition. Research of any kind should never become the boastful worship of group achievement, nor the cultivation of class or professional spirit, but an intelligent preparation for new adventure and a recognition of a duty on the part of the investigator to add to the sum of human knowledge and advance human efficiency. There should be no restriction of the field of pharmaceutical research in the minds of any, nor in actual practice, but all investigation should be so systematized and organized that an authoritative professional opinion of the results may be established.

All research work, whether made with slight expense and in a limited field, or researches involving much time and money over a wide area, receive value, not from the calling and profession of the investigator, but rather from the possibility of its application to any of the problems of any one or several professions whose needs the research may cover. So it does not become anyone to sit in the seat of the scornful when matters great or small seek dignity and place in any orderly and scientific classification of results.

This is not the place for me to anticipate the report of the Committee on Research of our Association. But there are two important phases of the work of the Committee during the past year that are worthy of special notice. One is that plans have been completed for the formation of a National Committee on Pharmaceutical Research composed at the present time of all national associations possessing committees performing research work. I bespeak for this national committee, organized upon the initiative of our Association, your enthusiastic approval and hearty support.

The second important work of our Committee has consisted of preliminary consultations with officers of the National Research Council looking toward coöperation of American Pharmacy with that Federal body which owes its origin to the needs of our country in time of war.

That this Council is turning its attention to the needs of these piping times of peace is a matter of deep concern and wide importance if we are to reap any of the benefits of those years of self-dependence.

As our research committee will report, invitations have been extended both by the chemical and botanical divisions of the National Council for pharmaceutical chemists and pharmaceutical botanists to establish sub-committees within the two divisions named. How such sub-committees can best function to the advantage of pharmacy will be the first subject taken up by the National Committee on Pharmaceutical Research.

The field of pharmaceutical research is an ever-widening one in both scope and opportunity. There is great need of developing among recent graduates of our schools these fields of activities which were not available to their elders. Every effort should be made to bring to their attention the advantages of such work whether carried on independently or in coöperation with established agencies. In this way we may be able to give a large measure of genuine service to the public welfare which is the strongest characteristic of any professional class.

AMERICAN PHARMACEUTICAL ASSOCIATION HEADQUARTERS AND DEPARTMENT OF PHARMACEUTICAL RESEARCH.

In the annual address of the President in 1913 and also in that of 1914, a proposition, which had been more or less in solution in the minds of many of our members, was precipitated in the form of a recommendation to establish an American Pharmaceutical Association Headquarters. Our ambitions of that time like those of many other forward-looking organizations were engulfed in the patriotic efforts we were called upon to make for the good of our country. To-day seems an opportune time to return to those pre-war ideals and visions.

A critical analysis of conditions reveals a number of excellent reasons why we should actively support such a plan.

The establishment of an American Pharmaceutical Association Headquarters in a building of its own in a great civic center, like Chicago or Washington, would create a veritable national center of all pharmaceutical activities. It would mean a more expeditious interchange of thought and activity and greater ease of coöperation between national organizations at work in pharmaceutical and kindred fields.

Other developments would take place which would enhance its value to all interested in our special line of work. Such a centralization of all our interests would put the profession in a position commensurate with its importance in our national life.

It would furnish a popular goal toward which the best minds in our profession would press by many different routes. By thus correlating all our activities there would not only be much less waste of effort, but also great opportunity for developing well-rounded programs.

It has seemed most worthwhile to me, for us to consider what such a Headquarters should be in order to cover the needs of all the agencies which are or should be allied with us in our efforts to promote the ideals of this Association.

For this purpose I cannot do better than to refer to the plan of Past-President Beringer in his 1914 address. I quote almost verbatim from that report because the recommendation was then very clearly thought out and my call to-day is to give embodiment to that pre-war vision.

President Beringer said:

> "Our plan should contemplate ample room and facilities for carrying on the secretarial and clerical work necessitated by the activities of the Association and ample accommodations for the editorial staff of the JOURNAL and other publications of the Association.
>
> "Well-equipped laboratories for research and study in which questions of scientific and trade value, and of public health and sanitation, can be systematically taken up and investigated. Many of the problems of the

U. S. P. and N. F. revisions are in need of such careful study and investigation.

"The formation of a Bureau of Education and Information, for the collection of data, valuable information as to drugs, source of supply and preparation, proper uses and dosage and to prepare and to distribute to the trade reliable information on trade questions and to educate the press and the public to the proper duties of pharmacists and to give wider publicity to popular information relating to our calling and the public welfare.

"A Museum must be provided for the collection, preservation and exhibition of drugs, adulteration, research results, etc., and likewise the historical data and archives that the Association is collecting.

"A Library must be founded and supplied with standard works, books of reference and current scientific and trade journals. There can be no research investigation without access to the literature.

"Ground either attached to the buildings or accessible for experimental work in drug cultivation.

"The buildings should be commodious, fire-proof and well ventilated. Ample funds should be guaranteed or, preferably, provided by endowment, to assure the successful carrying out of a comprehensive plan along the lines of these suggestions."

You will see that this provides for the actual structure for our plan but we need something more to make it a powerful instrument for our purpose. We need men to administer such activities. First, a Director, a number of Councilors or an Executive Committee, a permanent full-time Secretary, a Treasurer with an assistant possibly, an Editor and others.

And we shall need money and plenty of it.

Is this beyond our undertaking? I believe not. Our Association is the oldest of its kind and in all these years has laid a foundation for just such an effort. It has more than a nucleus of money, due to the careful administration of conservative men. It has more than a nucleus of intellectual and trained men with which to make a beginning.

I am confident that we have in our midst leaders and members with vision that is not visionary, who with insight into the future will still maintain our high standards without giving ground to what for the moment may seem expedient, who with firm determination will help us establish a strong foundation for the future development of the profession for which you have all given so abundantly and sacrificed so much.

Many of the weak features of professional and commercial pharmacy might be prevented if there were a national director, with compensation sufficient to enable him to devote all his time to the study, development and perfecting of all matters pertaining to the profession.

A full-time secretary would do much to bring the state and local association into fuller coöperation, assisting them to thresh out their problems along similar lines and strengthen their organizations.

A large measure of publicity would follow, reacting equally well on local and national associations. Thus an efficient mechanism would be built up and effective action taken in legislative matters, pernicious bills could be opposed, good bills

fostered, and wise and conservative measures be initiated, valuable research work could be accomplished which would make for American independence in pharmaceutical and chemical lines.

The very fact of the existence of a real Headquarters, with a man at the head of nation-wide reputation as an executive, legislator, and investigator (and we have such in our midst), would at once stimulate us to fulfil the ideals which you have expressed as the aim and object of this Association and which go out, clearly and simply stated, on the back of every membership blank. Such a Headquarters could not but stimulate research, diffuse scientific knowledge, foster sound pharmaceutical education, uphold the dignity of the profession and demonstrate to the public its importance. Once such a plant was established, the growth in all branches to which the Association has contributed in the long past would be beyond our dreaming. There would be no need of worrying how to increase our membership nor think how best to show its value to the average pharmacist.

Is this plan visionary? No. How best may we realize this which has for so long dwelt in our hearts and minds? Simply by getting down to business at once. Let us immediately appoint a committee of such men as drafted the objects of the Association's Research Fund—"a Ways and Means Committee," with power to enlarge their body. Let us not quibble at the expense of frequent meetings nor the hard work of a campaign for funds as long as we have the right committee. Let it be known that the American Pharmaceutical Association is back of this effort to help the pharmacists and chemists of the United States to grasp the opportunity in this the greatest of all times for them. Let us to-day appoint this Ways and Means Committee and enthusiastically, intelligently and steadily move forward toward the goal! But—

Do not use our present funds, nor stop them from growing—keep them increasing. Funds for a building and endowment must be secured by a Ways and Means Committee.

I recommend such a Committee, and to be appointed by the Council.

REPORT OF THE COMMITTEE ON THE PRESIDENT'S ADDRESS.

For convenient reference the action of the Association on the address of President C. H. Packard is here presented. The members of the Committee to whom the address was referred are: T. J. Bradley, chairman, Massachusetts; W. C. Anderson, New York; B. E. Hockert, Connecticut; Adam Wirth, Louisiana; and H. M. Faser, Mississippi.

The matter of dues was fixed by Council and Association at $5.00, and these bodies endorsed the action of the Section on Practical Pharmacy and Dispensing to create a committee within this section of Hospital Pharmacists; therefore, the recommendations of the President on these subjects were laid on the table. The other recommendations were approved; they are as follows:—

That a special committee be formed to secure increases in the permanent funds of the Association, especially the Endowment Fund, the Research Fund, and the Ebert Prize Fund.

That the Association continue its efforts to secure further enactments of prerequisite laws, and that this be made a subject for discussion at meetings of A. Ph. A., Local Branches.

That the Association give its hearty support to the movement for the establishment of Government agencies for handling alcoholic liquors, thereby removing the stigma on pharmacy, which is the result of the present regulations. That the Association continue its efforts to establish the general use of the Metric System in the United States, and that the Secretary be instructed to notify the World Trade Club of this action.

That a committee be appointed by the Council to find ways and means to secure and maintain a headquarters building for the Association with staff of officers.

THE HERAPATHITE TEST FOR QUININE.*

CHARLES H. STEPHENSON AND GEORGE L. KEENAN.

The so-called herapathite test for quinine, described by Herapath,[1] has long been recognized and described in textbooks on organic chemistry. When using this method for the identification of quinine in some tablets containing quinine sulphate, it became evident to the authors that the method of procedure as outlined could be simplified. The results obtained with their modified method have shown that the separation of the alkaloid from the tablet or pill is not necessary to obtain a crystalline precipitate characteristic of quinine.

The reagents employed, which were those recommended by Herapath, consisted of Solution A, composed of 12 Cc. of acetic acid, 4 Cc. of 95% alcohol, and 6 drops of a 10% solution of sulphuric acid, and Solution B, a 10% alcoholic solution of iodine. The technique used in making the test, modified in that the reagents were applied directly to the tablet or pill to be tested, rather than to the isolated alkaloid or its salt, was as follows:

Powder and place upon a microscopic slide a small portion of the tablet, a piece as large as the head of a pin being sufficient, and cover with a coverglass. Then add enough of Solution A to partly fill the space beneath the coverglass, and, from the opposite side of the coverglass, a drop or two of Solution B.

Rosettes of olive-green, cinnamon-brown, or bluish crystals immediately make their appearance in the preparation when examined under the microscope at about 90 magnification. This crystalline precipitate has been called "herapathite" after its discoverer and is known also as the "iodo-sulfate of quinine" or "sulfate of iodo-quinine" (Fig. 1). Single crystals, many of which appear as right-angled parallelograms and six-sided prisms, are present as well (Fig. 2).

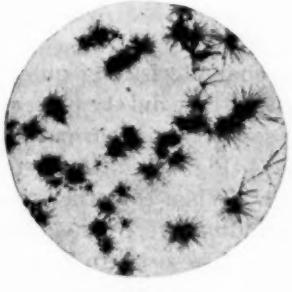


Fig. 1.
Herapathite Crystals.
(× 120.)

Fig. 2.
Herapathite Crystals.
(Illustrating Single Crystals.)

Fig. 3.
Crystals Obtained from Quinidine. (× 120.)

In order to determine what influence, if any, was exerted on the modified test by the presence of additional ingredients, tablets and pills containing substances other than quinine or its compounds were tested. The composition of the tablets

* Contribution from the Microchemical Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C. Read before Scientific Section, A. Ph. A., New Orleans meeting, 1921.

[1] *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, 3, 161–183, 1852; 6, 171–175, 1853.

employed for this purpose, according to the labels, was as follows:

No. 1:	Acetanilid	2	grains
	Quinine sulphate	1	grain
No. 2:	Camphor	1/2	grain
	Fldext. Belladonna	1/4	minim
	Quinine sulphate	1/2	grain
No. 3:	Quinine hydrobromide	1	grain
	Acetanilid	1	grain
	Aloin	1/10	grain
	Podophyllin	1/20	grain
	Gelsemide	1/50	grain
No. 4:	Acetanilid	2	grains
	Morphine sulphate	1/20	grain
	Quinine sulphate	2	grains
	Caffeine, pure	1/2	grain
No. 5:	Quinine	2	grains
	Ext. Aconite leaves	1/2	grain
	Morphine sulphate	1/20	grain
	Arsenious acid	1/20	grain
	Strychnine	1/30	grain
No. 6:	Quinine sulphate	2	grains
	Acetanilid	2	grains
	Morphine sulphate	1/8	grain
No. 7:	Camphor	1/4	grain
	Fldext. Belladonna	1/8	minim
	Quinine sulphate	1/4	grain
No. 8:	Acetphenetidin	2½	grains
	Quinine sulphate	2½	grains
No. 9:	Acetphenetidin	1	grain
	Ammonium salicylate	2	grains
	Quinine hydrobromide	1	grain
	Tinct. Gelsemium	1	minim
	Camphor	1/4	grain
No. 10:	Ferric chloride	1/2	grain
	Quinine hydrochloride	1	grain
	Arsenic chloride	1/64	grain
	Mercuric chloride	1/48	grain
No. 11:	Reduced iron	1/2	grain
	Arsenious acid	1/100	mgr.
	Strychnine sulphate	1/200	grain
	Quinine sulphate	1/2	grain
No. 12:	Quinine hydrobromide		
	Podophyllin		
	Aloin		
	Atropine sulphate		
	Strychnine sulphate		
No. 13:	Phenacetin		
	Opium		
	(Phene-sal)		
	Dover's powder		
	Quinine sulphate		
	Atropine sulphate		
	Aloin		
	Camphor		
	Strychnine sulphate		
No. 14:	Quinine tannate (powder)		
No. 15:	Quinine salicylate (powder)		

All of these samples gave the crystalline precipitate characteristic of quinine or its compounds when the test was applied as directed. In no case did the presence of other ingredients interfere with the reaction. The rosettes were clear-cut and easily discernible, particularly those obtained from Sample 4 (Fig. 1), single crystals (Fig. 2) being obtained from the reaction with Sample 13. When the other common cinchona alkaloids (cinchonine, cinchonidine and quinidine) were tested with these reagents, crystals were formed only with quinidine. These crystals, however, differed decidedly from those formed with quinine as they consisted of bundles of dark rods arranged characteristically (Fig. 3). The reaction is not a sensitive one and often crystals are obtained only with difficulty. Neither the powdered barks nor the tinctures of red cinchona and yellow cinchona gave crystalline precipitates when the reagents were applied.

The results of these tests demonstrated the simplicity with which the identity of quinine can be established without resorting to the technique required to obtain the alkaloid in a pure condition. The reagents are applied directly to the powdered material (tablet or pill), whereupon the crystalline precipitate is immediately formed. Such a simplified method of procedure should make the herapathite test more widely used than at present.

FAKE SAFFRON.*

BY ARNO VIEHOEVER AND J. F. CLEVENGER.

A most skilful attempt to change the appearance of a natural product other than saffron, so that it may appear to be that substance, has recently come to our attention. The material was imported from Spain. It resembled Crocus rather strikingly in appearance, as well as in flavor. Upon close inspection, however, it was quite evident that instead of the stigmas characteristic of Crocus, tubular florets characteristic of a member of the *Compositae* were present. This substitution was in fact complete, no stigmas of Crocus whatsoever being present. Considerable difficulty was experienced in identifying the product. Inasmuch as it appeared to be artificially colored and weighted, experiments were undertaken to determine the nature of the dye or dyes and of foreign substances, added to increase the weight.

BOTANICAL EXAMINATION.

Identification of the material as derived from a species of *Onopordon* was based mainly on the structure of the flowers. No other parts of the vegetative plant were present. The flowers, with the general characteristics of the thistle, and apparently 3 cm. in length, showing the style distinctly longer than the corolla, and filaments with the anthers and connectives equal to or exceeding the corolla in length. The form of the connectives is important for the purpose of identification, *Onopordon* having the narrowest connectives of the different flowers used in the adulteration of saffron. The pollen grains (see illustration, Plate 1, G) were of the general shape of those reported for *Onopordon*, having a spiny exine with three distinct openings. The glandular hairs of the stigma, the

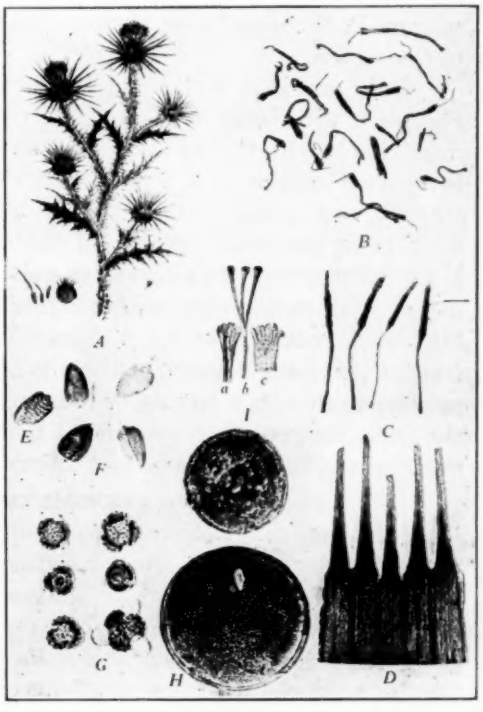


Plate 1.

A. *Onopordon sibthorpianum* Boiss and Heldr. (*O. macracanthum* Sibth. SM.) After Sibthorp, × 1/6.
B. Flowers of substitute as they appear in the drug, × 3/5.
C. Flowers of substitute soaked in water and straightened out, × 3/5, representing mainly the connectives.
D. Upper end of stamens of the flowers of the substitute, × 20.
E. Fruit found among the flowers of substitute, × 1 1/4.
F. Fruits from *Onopordon sibthorpianum*, × 1 1/4.
G. Pollen grains from flowers of substitute, × 125.
H. Pollen from flowers of *Crocus sativus* L., × 125.
I. *Crocus sativus*, showing:
   a. Upper part of stigma, slightly oversize.
   b. Style with stigmas, × 1/5.
   c. Papillose margin of stigma, × 25.
(After "National Standard Dispensatory.")

* Contribution from the Pharmacognosy Laboratory, Bureau of Chemistry, U. S. Department of Agriculture.

peculiar structure of the style and of the filament-base were also characteristic for *Onopordon*. In contrast to the flowers of *Onopordon*, saffron consists of branched styles with stigmas, Plate 1, *a*, *b*. These stigmas are characterized by a papillose margin, Plate 1, *c*. The pollen grains, observed in large numbers on the stigmas, are nearly spherical and have a smooth exine. They are about 75 to 150 microns in diameter, being approximately four times as large as the pollen grains of *Onopordon*.

Only one fruit was found in the material available to us. This fruit was compared with those of a species of *Onopordon* found in collections, and agreed most closely with that of *Onopordon sibthorpianum* Boiss and Heldr. This species is reported indigenous to Crete rather than to Spain, from where our material was shipped, and showed certain slight differences in the shape and structure of the fruit, being somewhat broader in outline and having less marked ridges. There is a possibility that the material was obtained from a species other than *sibthorpianum*. Unfortunately, no specimen of *sibthorpianum* could be found in the National Herbarium, nor did the fruits of certain species collected in Spain agree with the fruit found in our material. There is no question in our mind, however, that the product represents a species of *Onopordon* since the flowers in general, as well as the fruit, show the general type of that genera and are distinctly different from other genera, such as Cynara and Cnicus, reported to have been used as substitutes.

CHEMICAL DETERMINATION.

Identification of Artificial Color.—In order to ascertain whether the material was artificially colored, a portion of the flowers was placed in water, and from the concentrated solution a further dilution was prepared, resulting finally in a solution of 1–100,000. While, in the case of genuine Crocus, a distinct yellow color could be perceived, the solution obtained with the material was colorless. In fact, the tint produced with the substitute product in the more concentrated solutions was pinkish rather than yellow. The suspicion that artificial dye was added was further verified by the use of organic solvents.

STAINING TEST SAFFRON AND FAKE SAFFRON.[1]

Solvents used.	Genuine saffron (color).	Fake saffron (color).
Methyl alcohol	Yellow	Pink
Acetone	Lemon-yellow	Deep pink
Alcohol	Lemon-yellow	Salmon-pink
Dehydrated alcohol	Greenish yellow	Rose-pink
Ether	Yellow	Deep pink
Chloroform	Very slight yellow	Bright pink
Xylene	Colorless	Red
Benzene	Colorless	Deep pink
Carbon tetrachloride	Colorless	Pink
Carbon disulphide	Colorless	Red
H_2O	Yellow	Pinkish buff

As these data, ascertained by Ruth G. Capen, of this laboratory, showed the artificial dye added was distinctly different from crocetin, the glucoside of Crocus, further steps were taken to identify the coloring matter, which was found to be a mixture of Tartrazine (G. S. J. No. 94) and commercial Ponceau 2 R (G. S. J. No.

[1] 0.01 Gm. macerated in 5 Cc. of liquid.

55). The procedure used may be found in an article by Mathewson,[1] to whom we are indebted for the isolation and identification of the dyes.

Identification of Weighting Substances.—In order to ascertain whether the material was weighted, determinations were made of both the total and the acid-insoluble ash. The result was that while generally Crocus on the average contains only from 5 to 7 per cent total ash, over 30 per cent were found in the substitute material. The acid-insoluble ash was quite small, not exceeding 1 per cent.

Further experiments were carried on to identify the nature of the salt or salts present. We proceeded according to the method suggested by Nestler,[2] triturating about 20 flower parts in a mortar with a small amount of hot water, and evaporating the filtrate at room temperature on the object slide. Tetrahedral crystals of various sizes and characteristic shapes were found. (See Fig. I.) These crystals were identical with those obtained by evaporation at room temperature of a solution of borax and saltpeter. The crystals, though similar to saltpeter in general aspect, were found by Dr. E. T. Wherry, Crystallographer of the Bureau of Chemistry, to differ from that substance as well as from borax in crystallographic-optical properties. They therefore must represent a double salt of these two constituents, hitherto not described crystallographically in literature. In order to verify the presence of potassium nitrate and determine the approximate amount, a nitrogen determination was made in the Nitrogen Laboratory of this Bureau, resulting in 2 per cent total nitrogen, of which almost 1 per cent was in a water-soluble form. Calculated as potassium nitrate, this corresponds to 5.5 per cent. The presence of borax was shown by the well-known use of turmeric paper and the green flame of boric acid ester.

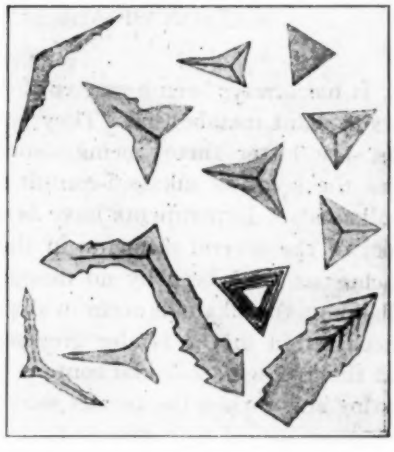


Fig. I.
Crystals of the double salt of potassium nitrate and borax. After Nestler.

Inasmuch as glycerin also had been found in adulterated samples of saffron, especially in those containing salt mixtures to which it had been added in order to prevent conspicuous crystallization, we tested for glycerin. In determining the presence of acreolin, a test of the distillation product of glycerin with the aldehyde reagent fuchsin sulphurous acid proved positive. When the material was overheated the characteristic odor of acreolin was also observed. We determined the glycerin quantitatively, according to the extraction method suggested by Cook,[3]

[1] Mathewson, W. E., Associate Chemist, Bureau of Chemistry, Department of Agriculture, "Separation and Identification of Food-Coloring Substances." *U. S. Dept. of Agric.*, Bull. No. 448, Feb. 15, 1917.

[2] Nestler, A., "Über Saffranverfälschungen," *Archiv für Chemie u. Mikroskopie*, 7, 70, 1914.

[3] Cook, F. C., "The Estimation of Glycerin in Meat Juices and Extracts," *Jour. Assoc. Official Agric. Chemists*, Vol. 1, No. 2, Aug. 1915, p. 279–281.

using further the methods recommended in *Bulletin* No. 107, Official and Provisional Methods of Analysis, Association of Official Agricultural Chemists, 1912, pp. 83–4. The amount found, after deducting the amount of color substance also obtained in the extraction of glycerin, was close to 4 per cent.

The odor of the drug suggested the addition of saffron oil and the crumpled appearance of the flowers indicated an intentional crinkling.

SUMMARY.

The product offered as saffron proved to be a substitute. This substitute was identified as a species of *Onopordon* closely related to *Onopordon sibthorpianum* Boiss and Heldr. The material was artificially dyed with a mixture of Tartrazine and commercial Ponceau 3 R. It was weighted with a salt mixture of at least 5 per cent potassium nitrate and borax. About 4 per cent glycerin was also found.

THE INFLUENCE OF INHIBITING FLOWERING ON THE FORMATION OF ALKALOIDS IN THE DATURAS.

BY A. F. SIEVERS.

It has always been a matter of conjecture as to what may be the rôle of alkaloids in plant metabolism. They have been considered as waste and as food products, the latter theory being somewhat strengthened by the fact that in many cases the seeds of alkaloid-containing plants contain a considerable percentage of alkaloids. Experiments have been made from time to time to determine the effect of the several elements in the soil on the formation of alkaloids, but the conclusions have been by no means concordant. The writer has shown that in belladonna the alkaloids occur in all parts of the plant but are present in the greatest concentration in the tender growing parts.[1] At an earlier date[2] it was shown that the average alkaloidal content of 59 belladonna plants was higher at the late fruiting stage when the berries were mostly ripe and the leaves small and sparse. It seemed logical to conclude that any interruption to the normal development processes of the growing plant would likely have a decided influence on the formation of such characteristic constituents as alkaloids, or greatly affect the translocation of such constituents. Since the seed of the Daturas contain a considerable quantity of alkaloids it was thought interesting to find out in what way the inhibition of seed formation, by removing the flower buds, would affect the alkaloidal content of such plants. It is the object of this paper to record the results of such an experiment, which, while probably not conclusive because it has not been carried on over a sufficiently wide range of conditions, gave such unexpected results that it should serve as a stimulus for further experiments along that line.

The experiment was made a number of years ago at Madison, Wis.,[3] and

[1] A. F. Sievers, "Distribution of Alkaloids in the Belladonna Plant," *Am. Journ. Pharm.*, Vol. 86, No. 3, p. 97, 1914.

[2] A. F. Sievers, "Individual Variation in the Alkaloidal Content of Belladonna Plants," *Jour. Agric. Res.*, Vol. 1, No. 2, pp. 129–146, 1913.

[3] The Pharmaceutical Experiment Station, University of Wisconsin, and the Office of Drug, Poisonous, and Oil Plant Investigations, Bureau of Plant Industry, U. S. Department of Agriculture coöperating. The writer wishes to acknowledge the assistance of Mr. G. A. Russell, the Department's representative at that time, who grew the plants, recorded the field observations, and furnished the material for assay.

included eight species and varieties of the genus Datura. An average individual plant was selected from each species or variety, and throughout the growing season the flower buds were removed as soon as they appeared. The remainder of the plants served as controls. The result of this treatment on the physical appearance of the plant was very great. The plant grew to the usual size but the leaves acquired fully twice the size of those on the control plants. This was true in a general way of all the species, and some of the leaves of *Datura stramonium* were found by actual measurement to be 8 inches wide and 12 inches in length and were exceedingly coarse. Leaves were picked from each one of the individuals from which the flowers had been removed, and for controls general samples of leaves were picked from the untreated plants of each species. After careful drying the samples were assayed. As the assay proceeded it became evident that the samples from the treated plants contained exceptionally large quantities of alkaloids. The results of the assays are given in Table I.

TABLE I.—THE EFFECT OF INHIBITING FLOWERING ON THE ALKALOIDAL CONTENT OF DATURA LEAVES.

Species or variety.	Percentage of total alkaloids. Control.	Flowers removed.
Datura leichardti	0.364	1.281
Datura gigantea	0.267	0.860
Datura quercifolia	0.347	1.021
Datura stramonium	0.622	1.825
Datura stramonium inermis	0.311	1.279
Datura tatula	0.465	1.247
Datura tatula inermis	0.514	1.645
Datura inermis	0.516	1.517
Average,	0.426	1.334

The foregoing results are certainly significant. When it is considered that the literature records only rare instances in which leaves from individual solanaceous plants have been found to contain as much as 1 percent of alkaloids it is truly remarkable that seven out of the eight individuals here included contained more than 1 percent, and in one case almost 2 percent, of total alkaloids.

Larger samples of leaves from *Datura stramonium*, *D. tatula*, and *D. stramonium inermis* were extracted quantitatively and the alkaloids determined gravimetrically, as follows:

> The finely powdered material was percolated with 95% alcohol until exhausted and the percolate evaporated *in vacuo* to a soft extract. This extract was then washed repeatedly with acidulated water until all the alkaloids had been taken up, the shakings combined and washed several times with chloroform to remove particles of coloring matter and then made ammoniacal and the alkaloids shaken out with successive portions of chloroform. The combined chloroform extracts were then evaporated to a small volume and the alkaloids allowed to crystallize out.

The mixed alkaloids obtained by the foregoing method appeared to be in a fairly pure state. A comparison of the percentage of total alkaloids indicated by the volumetric and gravimetric methods is given in Table II.

TABLE II.—COMPARISON OF THE PERCENTAGES OF TOTAL ALKALOIDS INDICATED AS BEING PRESENT BY THE VOLUMETRIC AND GRAVIMETRIC METHODS.

Sample.	Percentage of total alkaloids. Volumetric method.	Gravimetric method.
Datura stramonium	1.825	1.90
Datura tatula	1.279	1.33
Datura stramonium inermis	1.247	1.36

It will be noted that the results from the gravimetric method substantiate those obtained by the usual volumetric assay methods, the slightly higher results being due to the presence of some impurities in the mixed alkaloids obtained.

So far as the writer is aware, the literature records nothing comparable to the results obtained in this experiment, which were so unexpected that they invited further and more comprehensive study. It was planned to duplicate the work the next summer at the Drug Garden at Arlington, Va., on a much larger scale but unfortunately the entire patch of Daturas became infected with the Mosaic disease and the experiment was abandoned for the season. Since that time the writer has had no opportunity to take up the work again and very likely will not do so in the future. For this reason these results are presented here in the hope that others who are engaged in problems on drug plant culture may find an opportunity to repeat this experiment. It should prove interesting to work with the following questions in mind:

(1) Does the removal of flowering buds always result in the development of larger leaves and greater percentages of alkaloids?

(2) Is it by preventing flowering or preventing the seed from maturing that the typical effect is obtained?

(3) Has the extent of the leaf development any relation to the formation of the excessive quantities of alkaloids?

(4) Is the great increase in alkaloids confined to the leaves or is it equally true of the stems and roots?

(5) What is the effect of similar treatment on the other plants containing mydriatic alkaloids?

(6) Is it a seasonal or geographic characteristic?

BUREAU OF PLANT INDUSTRY,
U. S. DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C.

THE TITRATION OF CERTAIN ALKALOIDS.*

BY NORMAN EVERS.[1]

In examining the literature of analytical chemistry in the light of modern development of the theory of titrations one is struck by the haphazard way in which indicators are recommended for titrations. Most frequently indicators appear to have been chosen on account of the sharpness of the end-point rather than on account of suitability on the theoretical grounds for the titration in question. Further,

* Read before British Pharmaceutical Conference, Scarborough meeting, 1921. Reprinted from the *Pharmaceutical Journal and Pharmacist*, June 18, p. 470.

[1] Analytical and Research Laboratories of Messrs. Allen & Hanbury's Ltd.

the indicators used are chiefly confined to methyl orange, phenolphthalein, litmus, and cochineal, no one of which, with the exception of phenolphthalein, can be regarded as a good indicator when compared with the new and brilliant indicators which are now available. Probably the chief reason why these new indicators are not in more common use is the absence of any data as to the titrations to which they are applicable.

THEORETICAL CONSIDERATIONS.

In a theoretically perfect titration of a weak base, such as morphine, we should run in standard hydrochloric acid until we had in our solution nothing but pure morphine hydrochloride. The means by which we determine when the morphine is in the state of hydrochloride is by adding an indicator. Now all indicators change in color over a definite range of hydrogen ion concentration—that is to say, the change of color of an indicator is brought about by hydrogen ions, and what we are actually doing when we bring a solution to the neutral point of methyl orange, say, is to bring it to a definite hydrogen ion concentration. Therefore, if we add methyl orange to our morphine titration and bring the solution to the neutral point we are bringing the solution to a hydrogen ion concentration of about [1] PH = 4, or, if we use cochineal, to about PH = 6. Now if the hydrogen ion concentration of a solution of morphine hydrochloride of the strength used in the titration is PH = 4, methyl orange will give a correct result; if PH = 6, cochineal will give a correct result; but they cannot *both* give a correct result. It is necessary, therefore, in order to find the best indicator for use in any given titration, to determine the hydrogen ion concentration of a solution of the end product of the titration of the same strength as that produced in the titration. Then if we can find an indicator which has its color change at this hydrogen ion concentration, that indicator (other things being equal) should be the best for use in that titration.

TITRATION OF MORPHINE.

The British Pharmacopoeia recommends methyl orange for the titration of morphine; the United States Pharmacopoeia advises cochineal. In Allen's "Commercial Organic Analysis," Vol. V., p. 376, we find: "Morphine forms salts which are perfectly neutral in reaction to litmus and methyl orange, and hence it may be titrated with accuracy by the aid of standard hydrochloric acid and either of these indicators."

Experiments were therefore carried out in order to find the hydrogen ion concentration of pure morphine hydrochloride in 1% solution, which is about the strength most frequently employed in a titration.

Pure morphine was prepared from ordinary pure morphine hydrochloride by twice crystallizing from a dilute slightly alkaline solution saturated with ether. The crystals were dried and rendered anhydrous by heating at 115°.

A solution of exactly $\frac{N}{10}$ hydrochloric acid was prepared, standardized to phenolphthalein against $\frac{N}{10}$ sodium hydroxide (free from carbonate), which

[1] PH is the logarithm of the reciprocal of the hydrogen ion concentration in terms of normal, *i. e.*, if PH = 1 the hydrogen ion concentration is $\frac{N}{10}$; if PH = 2, $\frac{N}{100}$, etc. The lower the value of PH the more acid is the solution and *vice versa*. At the point of absolute neutrality PH = 7.

had been standardized against pure potassium hydrogen phthalate. In one experiment 0.817 Gm. anhydrous morphine was dissolved in 28.65 Cc. $\frac{N}{10}$ hydrochloric acid, and made up to 107.5 Cc. with neutral distilled water (giving a 1 percent solution of morphine hydrochloride). The hydrogen ion concentration of this solution was determined by the colorimetric method, and found to be PH = 3.65.

The mean of several experiments gave the PH of a 1% solution of morphine hydrochloride as 3.65. Now, this figure is within the range of the color change of methyl orange, but is on the acid side of the neutral tint, that is to say, a 1% solution of morphine hydrochloride will give a decidedly pink color with methyl orange. In order to titrate morphine to methyl orange, therefore, we must finish up with a decidedly pink color. As the usual procedure in morphine titrations is to add excess of acid and titrate back with alkali, it is much more likely that the end-point taken will be on the yellow side rather than pink, and the result will be low. But methyl orange is not the best indicator for morphine titrations. If we use brom-phenol blue, an indicator which is yellow in acid solutions and blue in alkaline solutions, we find that a hydrogen ion concentration of PH = 3.65 corresponds to the first appearance of a distinct blue color when we are passing from acid to alkaline. If, therefore, we dissolve morphine in excess of standard acid and titrate back with standard alkali to brom-phenol blue until a distinct blue color appears we get a more accurate result.

With cochineal, which has a range of hydrogen ion concentration of PH = 5 to 7, it is obvious that an accurate result cannot be obtained. The results of three titrations with the three indicators may be of interest. In each case the standard solutions were standardized to the indicators used. Methyl orange was taken to its neutral orange tint:

Indicator.	Percent morphine found.
Brom-phenol blue	100.0
Methyl orange	99.5
Cochineal	98.8

It may be noted that the statement frequently seen in the textbooks that a solution of morphine hydrochloride is neutral to litmus is unfounded. Pure morphine hydrochloride should be acid to litmus. Two commercial samples of morphine hydrochloride in 1 percent solution had a PH = 4.83 and 4.50, respectively, showing a slight excess of morphine over hydrochloric acid present. A sample of morphine crystals when titrated to the above end-point gave 101.4 percent morphine (hydrated), showing them to be slightly effloresced.

THE TITRATION OF QUININE.

Allen's "Commercial Organic Analysis," Vol. V, p. 514, states that "Quinine is a strong base, completely neutralizing acids and forming crystallizable salts having a slight alkaline indication to litmus. Quinine also forms a series of acid salts which are neutral to methyl orange."

Squire's "Companion" states that "Quinine hydrochloride is neutral, or at the most but faintly alkaline, in reaction towards litmus paper. It is usually recommended in the textbooks to titrate quinine salts to phenolphthalein. In this way the whole of the quinine is precipitated in the course of the titration, and the end-point is not very satisfactory.

A sample of carefully purified quinine free from other cinchona alkaloids was dehydrated by heating to 120°.

0.6744 Gm. anhydrous quinine was dissolved in 41.60 Cc. $\frac{N}{10}$ hydrochloric acid, thus forming quinine acid hydrochloride, and diluted to 1%. The PH of this solution was then determined and found as a mean of three experiments to be 3.40.

Quinine acid hydrochloride should therefore in 1% solution be neutral to brom-phenol blue, with which it should give a pale greenish yellow color. Methyl orange would be decidedly pink at this PH.

0.7144 Gm. anhydrous quinine was dissolved in 22.03 Cc. $\frac{N}{10}$ hydrochloric acid and diluted to 1 percent, forming the neutral hydrochloride. The PH of this solution was as a mean 5.15.

A solution of this PH is neutral to methyl red, with which it gives an orange color. It will be seen from the above results that we can most accurately titrate a solution of quinine hydrochloride or sulphate by adding standard acid until a pale greenish yellow color corresponding to PH = 3.4 is obtained. A commercial sample of quinine hydrochloride titrated in this way gave 99.97 percent. In the same way quinine acid hydrochloride or sulphate may be titrated with standard alkali until an orange color corresponding to a PH of about 5.15 is obtained with methyl red solution. A sample of quinine acid hydrochloride titrated in this way gave 97.3 percent. The end-points are not quite so sharp with quinine as with morphine, but with a little practice quite reliable results can be obtained. This method of titration may be applied to ammoniated tincture of quinine for the combined determination of quinine and ammonia in the following manner: 25 Cc. of the tincture are run into 50 Cc. $\frac{N}{2}$ hydrochloric acid, brom-phenol blue is added, and the liquid titrated back with $\frac{N}{2}$ alkali until a pale greenish yellow color is obtained. Let a = No. of Cc. $\frac{N}{2}$ alkali used. Methyl red is then added to the solution and the titration continued with $\frac{N}{10}$ alkali until the pink color of the methyl red disappears and only the blue color of the brom-phenol blue remains.

Let b = No. of Cc. $\frac{N}{10}$ alkali used.

W/v quinine sulphate B. P. $= b \times 0.1763$

$$\text{W/v ammonia} = 50 - \left(a + \frac{b}{5}\right) \times 0.034.$$

Commercial samples of quinine salts tested in 1% solution gave the following values for PH:

	PH.
Quinine hydrochloride	6.2
Quinine acid hydrochloride	3.7
Quinine acid sulphate	3.6

THE TITRATION OF ATROPINE.

The B. P. and U. S. P. employ cochineal for the titration of the alkaloids obtained from belladonna.

Squire's "Companion" (nineteenth edition) states that "atropine may be readily determined by titration, using cochineal or iodeosin as an indicator." Atropine sulphate is stated to be neutral to litmus paper.

Allen's "Commercial Organic Analysis," Vol. V, page 296, states that commercial atropine sulphate is often faintly alkaline, and keeps better when so made.

In order to determine the PH of a 1% solution of atropine hydrochloride, a known weight of pure atropine was dissolved in the theoretical volume of $\frac{N}{10}$ hydrochloric acid and made up to 1 percent strength. The PH of the solution was found to be 3.75.

This corresponds to a distinct blue color with brom-phenol blue, and is reasonably close to the end-point of the morphine titration given above. It is again evident the cochineal is an unsuitable indicator for this titration, and that brom-phenol blue should be used, finishing with a distinct blue color.

A commercial sample of atropine sulphate had in 1% solution PH = 5.9, showing that it contained an excess of atropine over the sulphuric acid.

SUMMARY.

On theoretical grounds and as the result of practical experiments it has been shown that the indicators ordinarily employed for the titration of the alkaloids, morphine, quinine, and atropine, are not the most suitable for the titrations.

From measurement of the hydrogen ion concentration of the solutions of the pure hydrochlorides it was found that brom-phenol blue is a better indicator to use for morphine, atropine, and the neutral salts of quinine. For the acid salts of quinine, methyl red is the most suitable indicator.

THE STRUCTURAL RELATIONS AMONG OPIUM, BERBERIS, CORYDALIS, AND HYDRASTIS ALKALOIDS.

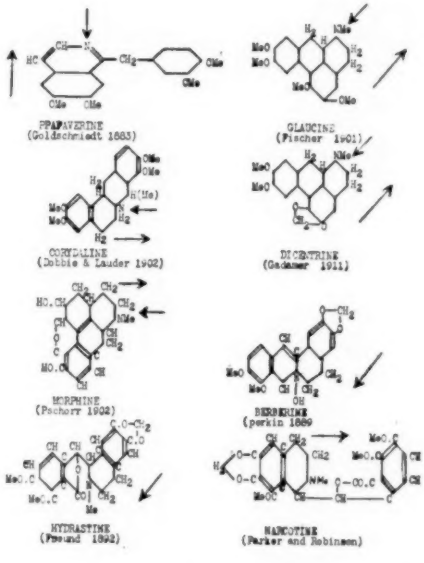
BY INGO W. D. HACKH.*

This paper has a twofold purpose: first, to discuss some striking relations in structure of a number of important alkaloids which enables a systematic classification; second, to point the way to synthetic preparation of these alkaloids.

The rapid rise and success of synthetic organic chemistry has come mainly by an application of the structure theory, for once the structure is established, it remains only a matter of time until some synthetic method for the preparation of the compound is discovered. The painstaking investigations of a number of workers have established, with some certainty, the structure of many alkaloids, a number of which contain the isoquinoline nucleus. The structure formulas of the more important isoquinoline alkaloids are shown on the following page. All these structure formulas are taken from one of the larger reference books, yet they illustrate the random method of the present system of notation. Thus the formulas for hydrastine and narcotine are printed completely—showing every atom; the other six structure formulas are incomplete in varying degrees through absence of symbols or double bonds. It is small wonder that this inconsistent way of representing the structures of organic compounds clouds the understanding and bewilders the student while it remains forever a mystery to the layman. Small progress can be made if the notation is not precise and complete. On looking over these same structure formulas, there appears to be no relationship among these alkaloids, even though the reader's knowledge supplies all the missing double bonds and symbols. The isoquinoline group, when hunted for, is found in each case, either standing on its head or inclined at various angles. With the use of

*College of Physicians and Surgeons, San Francisco, Cal.

structure symbols, a simpler and more precise notation,[1] and bringing the structure symbols of all these compounds into the same relative position of the isoquinoline group, a close connection among these structures at once becomes apparent. The shift necessary to bring the structures into the same position is indicated by the arrow.



According to the structure of these alkaloids, established at different times by different investigators, it is possible to arrange them into nine groups which have definite relationship. By bringing these nine groups into a logical system, it also becomes possible to predict the existence of additional nine groups. The remarkable genetic relationship of the alkaloids of opium, berberis, corydalis, and hydrastis might furthermore be of benefit in construction of structure for the little known alkaloids of other medicinal plants; such as Glaucium, Eschscholtzia, Coptis, Bicuculla, Dicentra, Jateorrhiza, Anamirta, and Xanthoxylum, which are known to have alkaloids of a similar nature. If theoretical considerations lead to the assumption of nine different ring systems, and none of these ring systems has yet been found, it is a safe guess that future investigations will reveal alkaloids belonging to these groups.

The relation of these eighteen groups is shown in the diagram at the top of the following page.

Capital letters indicate those groups of which one or more compounds are known, while small letters indicate those ring systems which at present have unknown alkaloids. The simplest group is A, the papaverine group, to which belong the alkaloids, papaverine, paperoline, laudanosine, etc., and as all the alka-

[1] *Canadian Chem. Journ.*, 2, 135 1918; *Science*, 48, 333, 1918; *Chem. Eng.*, 26, 377, 1918; *Chem. News.*, 118, 289, 1919 and 121, 85, 1920; *Chem. Age* (London), 3, 392, 1920; JOUR. A. PH. A., 9, 392, 1920.

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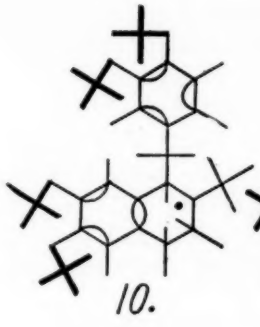
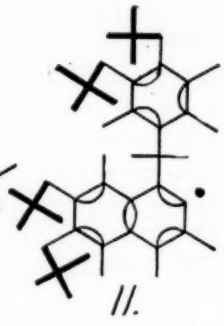
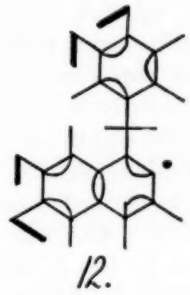
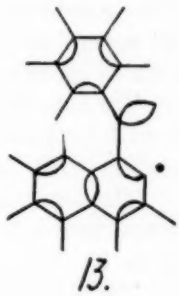
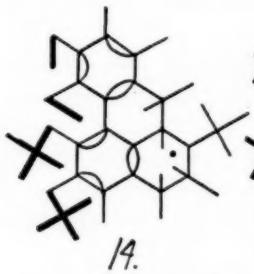
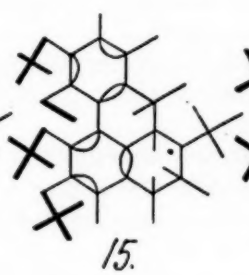


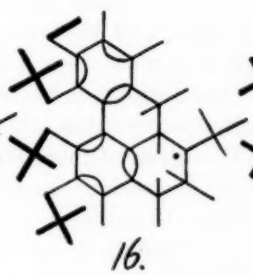


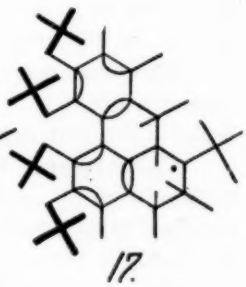






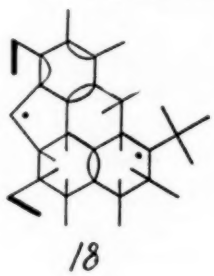


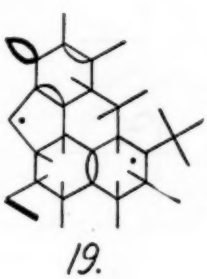


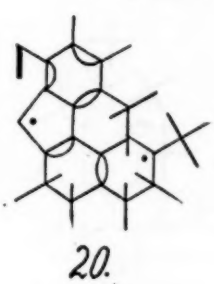


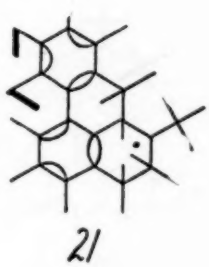
10—Laudanosine
11—Papaverine
12—Papaveroline
13—Papaveraldine

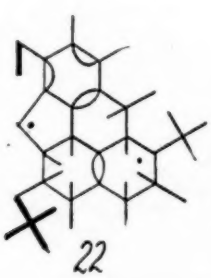
14—Corytuberine
15—Corydine
16—Isocorydine
17—Glaucine

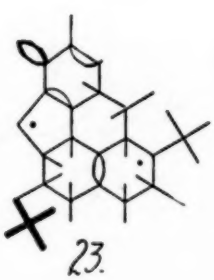


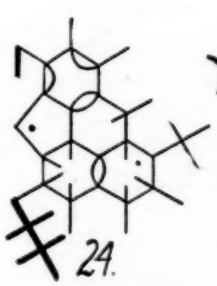


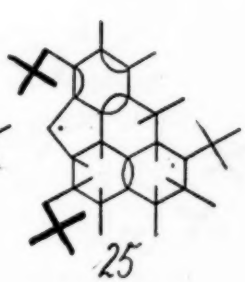












18—Morphine
19—Morphine (quinoid form)
20—Apomorphine (ether form)
21—Apomorphine (carbinol form)

22—Codeine
23—Codeine (quinoid form)
24—Dionine
25—Thebaine

Laudanosine (10) contains four methoxy groups attached to the carbon atoms numbered 6, 7, 12, and 13. Papaverine (11) is unsaturated laudanosine, and paperoline (12) differs from papaverine by having hydroxy groups instead of methoxy groups, while papaveraldine (13) has the keto group in position 9.

The substance B is derived from A by the formation of a fourth ring brought about by connecting the eighth and eleventh carbon atom. To group B belong corydine (15), isocorydine (16), corytuberine (14), and glaucine (17).

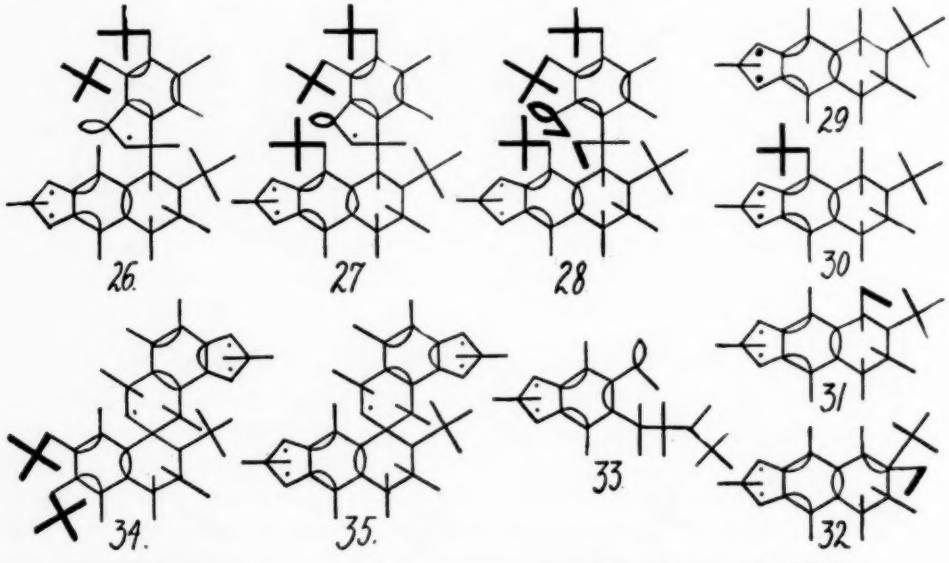
The substance *c* is derived from A by connecting the ninth and eleventh carbon atom of A with a -COO- group, thus forming a fourth pentatomic ring which is also present in the hydrastine group.

The substance *d* is derived from A by connecting the first and eleventh carbon atom of A by a -COO- group, thus forming a hexatomic ring, which is also present in the cryptopine and protopine groups.

The substance E is derived from A by connecting the fifteenth and sixteenth carbon atom of A, thus forming a hexatomic ring. To this group belong corydaline (36) and dehydrocorydaline (37).

The substance F is derived from B by connecting the seventh and twelfth carbon atom by an oxygen atom. Morphine (18) is then 6, 13-dihydroxy- of B, codeine (22) is 6-hydroxy-13-methoxy of B, dionine (24) is 6-hydroxy-13-ethoxy- of B, thebaine (25) is 6, 13-dimethoxy- of B.

The substance G is derived from B by the formation of a methylene-dioxy ether. Thus the -O.CH_2.O- group can be attached to the sixth and seventh carbon atom. Dicentrine (39) is 12, 13-dimethoxy- compound of G, while bulbocapnine (38) is the 12-hydroxy-13-methoxy compound of G.



26—Hydrastine
27—Narcotine
28—Narceine
29—Hydro-hydrastinine
30—Hydro-cotarnine
31—Hydrastinine, carbinol form
32—Hydrastinine, ammonium form
33—Hydrastinine, aldehyde form
34—Cryptopine
35—Protopine

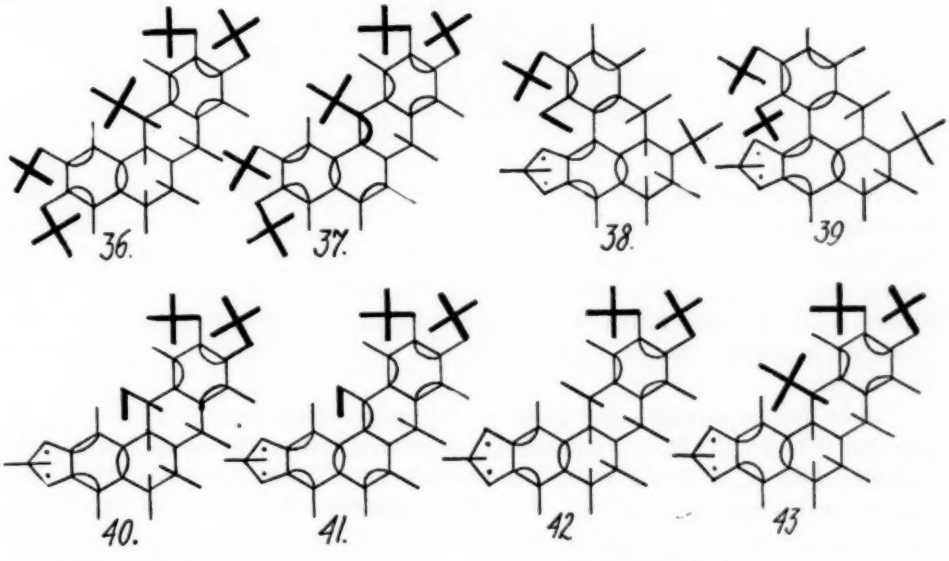
The substance *h* is derived from B by attaching the methylene-dioxy group to the twelfth and thirteenth carbon atom.

The substance I is derived from *c* by attaching the methylene-dioxy group to the sixth and seventh carbon atom. Hydrastine (26) is then 12, 13-dimethoxy-compound of I, and narcotine (27) is 8, 12, 13-trimethoxy compound of I.

The substance *j* is derived from *c* by attaching the methylene-dioxy group to the twelfth and thirteenth carbon atom.

The substance *k* is derived from *d* by attaching the methylene-dioxy group to the sixth and seventh carbon atom.

The substance L is derived from *d* by attaching the methylene-dioxy group to the twelfth and thirteenth carbon atom. Cryptopine (34) is 6,7-dimethoxy compound of L.



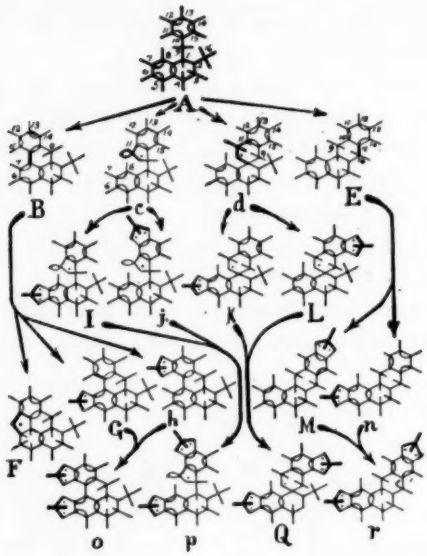
36—Corydaline
37—Dehydrocorydaline
38—Bulbocapnine
39—Dicentrine
40—Dihydroberberine
41—Berberine
42—Canadine
43—Artarine

The substance M is derived from E by attaching the methylene-dioxy group to the sixth and seventh carbon atom. Canadine (42) is 12, 13-dimethoxy- compound of M; berberine (41) is 9-hydroxy-12, 13-dimethoxy- compound of M; artarine (43) is the 9-methyl-12, 13-dimethoxy- compound of M.

The substance *n* is derived from E by attaching the methylene-dioxy group to the twelfth and thirteenth carbon atom.

The substance *o* is derived from G or *h* by attaching the methylene-dioxy group either to the 12th, and 13th, or to the 6th and 7th carbon atom; likewise *p* is derived from I or *j*.

In a similar way substance Q is derived from *k* or L, and finally the substance *r* from M or *n*. Protopine (35) is the substance Q.



It will be noticed that from the tricyclic compound A (papaverine group) there are derived four tetracyclic compounds (B, *c*, *d* and E), the additional ring being formed between the carbon atoms numbered 8–11, 9–11, 1–11, and 15–16, respectively. Alkaloids containing the structural system B and E are known, while the derivatives of *c* and *d* are found in the groups I, L and Q. The unknown alkaloids, that is, the hydroxy and methoxy compounds, are given in the table.

Substitution usually takes place in the preferred positions 6.7- and 12.13-, whether it be by the hydroxy, methoxy, or ethoxy group. From each tetracyclic compound (B, *c*, *d*, E) there are two pentacyclic compounds derived by attaching the methylene-dioxy group, which forms the fifth ring, either in the 6.7- or 12.13- position; thus, G and M are 6.7- derivative while I and L are the 12.13-derivatives—these four types justify the prediction of *h*, *j*, *k*, and *n*.

Finally Q, the only hexacyclic compound of the series, has a methylene-dioxy group in both positions and indicates the possibility of the compounds *o* and *p*.

Some of the possible isomers are indicated in the attached list and it is highly probable that alkaloids corresponding to these formulas will be isolated. It contributes to the plausibility of this genetic relationship among important alkaloids, that the structures used in this paper have been established by independent workers; *e. g.*, Goldschmidt, Fischer, Dobbie, Lauder, Pschorr, Freund, Parker, Robinson, Perkin, etc., etc., and thus the system of alkaloids might aid in the selection of the more probable form of a structure. In this connection it appears that the structure formula for morphine as given by Pschorr is the correct formula and more plausible than those given by Freund and others.

Systematic list of alkaloids derived and related to Compound A.

Derivatives of compound A = $C_{17}H_{19}N$:

$C_{17}H_{19}O_4N$ = 6.7.12.13-tetrahydroxy derivative

$C_{18}H_{21}O_4N$ = 6.7.12-trihydroxy-13-methoxy derivative

6.7.13-trihydroxy-12-methoxy derivative
6.12.13-trihydroxy-7-methoxy derivative
7.12.13-trihydroxy-6-methoxy derivative
$C_{19}H_{23}O_4N$ = 6.7 -dihydroxy-12.13-dimethoxy derivative
6.12-dihydroxy-7.13-dimethoxy derivative
6.13-dihydroxy-7.12-dimethoxy derivative
7.12-dihydroxy-6.13-dimethoxy derivative
7.13-dihydroxy-6.12-dimethoxy derivative
12.13-dihydroxy-6.7-dimethoxy derivative
$C_{20}H_{25}O_4N$ = 6-hydroxy-7.12.13-trimethoxy derivative
7-hydroxy-6.12.13-trimethoxy derivative
12-hydroxy-6.7.13-trimethoxy derivative
13-hydroxy-6.7.12-trimethoxy derivative
$C_{21}H_{27}O_4N$ = 6.7.12.13-tetramethoxy derivative = laudanosine

Derivatives of unsaturated compound A = $C_{16}H_{13}N$:

$C_{16}H_{13}O_4N$ = 6.7.12.13-tetrahydroxy derivative = paperoline
$C_{17}H_{15}O_4N$ = trihydroxy-methoxy derivatives (4 compounds)
$C_{18}H_{17}O_4N$ = dihydroxy-dimethoxy derivatives (6 compounds)
$C_{19}H_{19}O_4N$ = hydroxy-trimethoxy derivatives (4 compounds)
$C_{20}H_{21}O_4N$ = 6.7.12.13-tetramethoxy derivative = papaverine

Derivatives of compound B = $C_{17}H_{17}N$:

$C_{17}H_{17}O_4N$ = 6.7.12.13-tetrahydroxy derivative (1 compound)
$C_{18}H_{19}O_4N$ = trihydroxy-methoxy derivatives (4 compounds)
$C_{19}H_{21}O_4N$ = dihydroxy-dimethoxy derivatives = corytuberine and 5 isomers
$C_{20}H_{23}O_4N$ = hydroxy-trimethoxy derivatives = corydine and 3 isomers
$C_{21}H_{25}O_4N$ = 6.7.12.13-tetramethoxy derivative = glaucine

Derivatives of compound C = $C_{18}H_{17}O_2N$:

$C_{18}H_{17}O_6N$ = tetrahydroxy derivative (1 compound)
$C_{19}H_{19}O_6N$ = trihydroxy-methoxy derivatives (4 compounds)
$C_{20}H_{21}O_6N$ = dihydroxy-dimethoxy derivatives (6 compounds)
$C_{21}H_{23}O_6N$ = hydroxy-trimethoxy derivatives (4 compounds)
$C_{22}H_{25}O_6N$ = tetramethoxy derivative (1 compound)

Derivatives of compound *d* = $C_{18}H_{19}ON$:

$C_{18}H_{19}O_5N$ = tetrahydroxy derivative (1 compound)
$C_{19}H_{21}O_5N$ = trihydroxy-methoxy derivative (4 compounds)
$C_{20}H_{23}O_5N$ = dihydroxy-dimethoxy derivative (6 compounds)
$C_{21}H_{25}O_5N$ = hydroxy-trimethoxy derivative (4 compounds)
$C_{22}H_{27}O_5N$ = tetramethoxy derivative (1 compound)

Derivatives of compound E = $C_{17}H_{17}N$:

$C_{17}H_{17}O_4N$ = tetrahydroxy derivative (1 compound)
$C_{18}H_{19}O_4N$ = trihydroxy-methoxy derivative (4 compounds)
$C_{19}H_{21}O_4N$ = dihydroxy-dimethoxy derivative (6 compounds)
$C_{20}H_{23}O_4N$ = hydroxy-trimethoxy derivative (4 compounds)
$C_{21}H_{25}O_4N$ = tetramethoxy derivative (1 compound)
$C_{22}H_{27}O_4N$ = 9-methyl-tetramethoxy derivative = corydaline

Derivatives of compound F = $C_{17}H_{19}ON$:

$C_{17}H_{19}O_3N$ = 6.13-dihydroxy derivative = morphine
$C_{18}H_{21}O_3N$ = 6-hydroxy-13-methoxy derivative = codeine
13-hydroxy-6-methoxy derivative = iso-codeine
$C_{19}H_{23}O_3N$ = 6.13-dimethoxy derivative = thebaine
6-hydroxy-13-ethoxy derivative = dionine
13-hydroxy-6-ethoxy derivative = iso-dionine

Derivatives of compound G = $C_{18}H_{17}O_2N$:

$C_{18}H_{17}O_4N$ = 12.13-dihydroxy derivative (1 compound)
$C_{19}H_{19}O_4N$ = 12-hydroxy-13 methoxy derivative = bulbocapnine

$C_{20}H_{21}O_4N$ = 12.13-dimethoxy derivative = dicentrine

Derivatives of compound *h* = $C_{19}H_{17}O_2N$:

Similar to those of compound G

Derivatives of compound I = $C_{11}H_{11}O_4N$:

$C_{19}H_{17}O_6N$ = 12.13-dihydroxy derivative (1 compound)

$C_{20}H_{19}O_6N$ = hydroxy-methoxy derivative (2 compounds)

$C_{21}H_{21}O_6N$ = 12.13-dimethoxy derivative = hydrastine

Derivatives of compound *j* = $C_{19}H_{17}O_4N$:

Similar to those of compound I

Derivatives of compound *k* = $C_{19}H_{19}O_3N$:

Similar to those of compound L

Derivatives of compound L = $C_{19}H_{19}O_5N$:

$C_{19}H_{19}O_5N$ = dihydroxy derivative (1 compound)

$C_{20}H_{21}O_5N$ = hydroxy-methoxy derivative (2 compounds)

$C_{21}H_{23}O_5N$ = 12.13-dimethoxy derivative = cryptopine

Derivatives of compound M = $C_{18}H_{13}O_2N$:

$C_{18}H_{13}O_5N$ = 9.12.13-trihydroxy derivative (1 compound)

$C_{19}H_{15}O_5N$ = dihydroxy-methoxy derivatives (3 compounds)

$C_{20}H_{17}O_5N$ = 9-hydroxy-12.13-methoxy derivative = berberine

$C_{21}H_{19}O_5N$ = 9.12.13-trimethoxy derivative (1 compound)

Derivatives of compound *n* = $C_{18}H_{13}O_2N$:

Similar to those of compound M

Derivatives of compound *o* = $C_{19}H_{17}O_4N$:

No hydroxy or methoxy derivatives possible

Derivatives of compound *p* = $C_{20}H_{17}O_6N$:

No hydroxy or methoxy derivatives possible

Derivatives of compound *Q* = $C_{20}H_{19}O_5N$ (protopine):

No hydroxy or methoxy derivatives possible

Derivatives of compound *r* = $C_{17}H_{15}O_4N$:

No hydroxy or methoxy derivatives possible

THE EXTRACTION OF LICORICE.*

BY WILBUR L. SCOVILLE.

Licorice is one of the troublesome drugs from which to make galenical preparations. Its use chiefly as a flavoring agent, and the fact that its flavoring principle, glycyrrhizin, is easily soluble in water, and supposedly more soluble in alkaline solutions, have led to the general application of weak ammonia solutions as a menstruum.

But licorice root contains a large amount of soluble matter of an albuminoid character which is dissolved by the ammoniacal menstruum, and which is prone to mould or sour in the extract form, or to precipitate or even gelatinize from solution. Some samples of licorice root contain so much of this extraneous matter that it cannot be held in solution in fluidextract strength. Obviously this reflects upon the present U. S. P. process and menstruum.

The use of an alcoholic menstruum would easily solve that part of the problem, but such would be an unwarranted expense if other means can be found to satisfactorily extract and hold the flavoring principles.

At the New York meeting of the American Pharmaceutical Association Dr. Anthony Armentano recommended boiling water as the most satisfactory men-

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* Read before Scientific Section, A. Ph. A., New Orleans Meeting, 1921.

struum for fluidextract of licorice, with evaporation of the percolate *in vacuo* (temperature not stated) and the addition of 20 percent of alcohol to the concentrate.

This process is an improvement over that of the U. S. P. IX, but the product is not as miscible with other fluids as may be desired. It however furnished a good basis for further investigation. I first learned that, as compared with the ammoniacal menstruum, boiling water yields about half as much extractive matter but fully as much flavor. This indicates that the boiling water rejects some inert material which is dissolved by the ammoniacal menstruum.

Then a series of extracts and fluidextracts were prepared with variations in the process.

Ten experiments were made with boiling water, evaporating the percolate (a) *in vacuo*, or (b) slowly at a temperature between 40° and 50° C. in open dishes, or (c) boiling down the percolate in open pans. All of these fluidextracts were finished by adding glycerin to the percolate—usually to contain 375 Cc. per 1000 Cc. In this series the percolates which were evaporated at a low temperature show more precipitate in the bottle than those which were subjected to greater heat. It was also noticed that in evaporating at or near 100° C. a precipitate formed which was not again soluble in water, or even in weak ammonia solution. But the solutions which were boiled down in open dishes showed no less flavor or aroma than those evaporated at lower temperatures. One sample, which was evaporated at low temperature, was saturated with sugar and adjusted to fluidextract strength. This contains about 75 grammes of sugar per 100 Cc. and has remained perfectly clear.

Hot percolation with a glycerinated menstruum in two cases gave unsatisfactory results. Instead of adding the glycerin to the concentrated percolate obtained with hot water, the glycerin was mixed with an equal volume or twice its volume of water and the drug digested in this, then exhausted with hot water, then concentrated. In each instance the finished fluidextract precipitated badly on standing, one of them completely gelatinizing in the bottles.

Five samples were made by exhausting the licorice with boiling water, concentrating to a small volume and adding acid to precipitate the glycyrrhizin. This settled down in a firm mass on standing, from which the acid mother liquid could be decanted, the glycyrrhizin was washed two or three times with water, the glycyrrhizin dissolved in ammonia water, the excess of ammonia driven out by heating on the steam-bath, then glycerin and water added to volume. Both hydrochloric and sulphuric acids were tried, and in two instances the precipitating liquids were chilled for a number of hours to promote the full precipitation of glycyrrhizin. But the finished preparations all showed a loss of 20 to 30 percent in flavor. In physical appearance they are all ideal, being clear and of good flavor and color after standing six months or more.

Two samples were made in which the gummy and albuminous matters were precipitated by alcohol. In one instance the aqueous percolate from 250 Gm. of drug was concentrated to 200 Cc. and 200 Cc. of alcohol were added. In the second instance 400 Cc. of alcohol were added to a like amount. After standing three days, the liquids were filtered, the precipitates washed with some alcohol-water mixture corresponding to that in the clear filtrate, then the alcohol was recovered

by distillation, the liquids concentrated to a volume of 156 Cc. and 94 Cc. of glycerin were added.

The product which was treated with an equal volume of alcohol has precipitated some on standing, while that to which two volumes of alcohol were added remains perfectly clear.

All of the above tend to show that cold water and ammoniated water extract a lot of gummy and albuminous matters which are of no value but on the contrary are troublesome in producing precipitation or growing bacteria and moulds. A further evidence is found in the fact that the fluidextracts which were made by percolating with boiling water and concentrating the percolate by boiling in open pans mix well with 73% alcohol, and those which were extracted with boiling water but concentrated at a low temperature mix well with 65% alcohol, while the alkaline extracted samples do not mix well with diluted alcohol.

None of the above samples contains alcohol in the finished preparation. One sample which contains 25 percent of glycerin, by volume, has precipitated considerably and shows a fungoid growth at the top. A sample containing 30 percent of glycerin has kept well for eight months. The rest all contain 37.5 percent of glycerin, by volume, which seems to be sufficient to preserve the liquid and it adds to the sweetness also.

In this respect as well as in cost and the avoidance of restrictive factors it has an advantage over alcohol.

For the solid extract the drug was extracted by boiling water, the percolate boiled down to a small volume, then filtered and the filtrate evaporated to extract consistency. None of the four samples so made shows any change on standing whereas some made by extracting with ammoniated water have moulded.

While the use of heat in extracting and concentrating licorice percolates has not proved altogether satisfactory in preventing precipitation in the fluidextracts, yet the amount is very much diminished and in none of my samples is there enough precipitation to be really troublesome. In economy of extraction and in miscibility with alcoholic fluids they are a decided improvement over the present official methods, and there is also less tendency to mould or sour.

For a fluidextract of licorice, glycerin is recommended as a preservative in preference to alcohol.

LABORATORY OF PARKE, DAVIS & CO.,
DETROIT, MICH.

OBSERVATIONS ON MUIRA-PUAMA.*

BY HEBER W. YOUNGKEN.

Several months ago, the writer was called upon to determine the authenticity of a woody root which was labeled Muira-Puama. Being interested in the new problem, he compared this specimen both as to macroscopical and microscopical features with two samples of a root likewise marked "Muira-Puama" in the crude drug collections of the Philadelphia College of Pharmacy and Science. On the label of one of the specimen jars containing the root appeared the botanical origin

* Read before Scientific Section, A. Ph. A., New Orleans Meeting, 1921.

which was given as "*Liriosma ovata*" Miers. A comparative study proved that all three samples were identical.

Until recently, comparatively little Muira-Puama has been seen in this country for about fifteen years. At present it is being shipped from Para and Rio de Janeiro, Brazil, to various manufacturing pharmaceutical houses in the United States where it is made into a fluidextract which is then sent back to Brazil, there being no particular demand for it here. In Brazil and France it is employed in the form of fluidextract and other preparations for the treatment of nervous disorders.

DESCRIPTION OF PLANT.

Liriosma ovata Miers[1] is a small tree about 14 feet in height belonging to the Olive family and found growing in Brazil. Its leaves are short-petioled, up to two and three-fourth inches in length and one and five-eighth inches in breadth, broadly ovate, attenuated at apex, obtuse at base, light green on upper surface, dark brown on lower surface, venation pinnate-reticulate, the few veins being short arched and turning back toward the mid-rib, veins scarcely visible on the lower surface, margin slightly reflexed. The inflorescences consist of short axillary racemes of 4 to 6 flowers each.

DESCRIPTION OF ROOT.

Conical, nearly straight, tapering to a small point, from one-half to one and one-half feet in length and from one-eighth to one and one-half inches in diameter; externally light brown to grayish brown, faintly longitudinally striated and beset with short, sharp projections which occasionally unite two or more roots; fracture strongly tough and fibrous; internally light brown with thin bark and broad wood; odor faint; taste slightly saline and acrid.

HISTOLOGY OF ROOT.

Sections of the root of Muira-Puama exhibit the following histological characteristics, passing from periphery toward the center:

1. Cork, composed of several layers of tabular cells with lignified walls and brownish contents.

2. Phellogen of clear meristematic cells.

3. Cortex, a broad zone of starch-containing cortical parenchyma, imbedded in which are cells containing a resinous substance and scattered groups of sclerenchyma fibers accompanied by crystal fibers.

4. Phloem, a narrow zone of sieve tubes and phloem cells, the latter possessing numerous starch grains. Imbedded in this region are groups of thick-walled, lignified bast fibers accompanied by crystal fibers.

5. Cambium, a prominent circular zone of meristematic cells.

6. Xylem, a very broad zone of radiately arranged wood wedges separated by starch-containing medullary-rays. Each xylem patch is composed of numerous wood fibers with lignified walls that have simple oblique pits, scattered among which are wood parenchyma cells containing starch and crystals of calcium oxalate and porous and pitted tracheae. Crystal fibers, the cells of which contain rhombohedral or cubical shaped crystals of calcium oxalate frequently adhere to the wood fibers.

POWDERED DRUG.

Light brown; simple and compound starch grains, the individual grains being spheroidal or 2- to 4-compound with circular or 2- to 3-cleft hilum and averagely 7.5 to 15 microns in diameter; numerous crystals of calcium oxalate in crystal fibers and rhombohedral or cubical crystals; numerous fragments of sclerenchyma fibers, the latter often accompanied by crystal fibers; numerous fragments of tracheae with bordered pores or simple pitted walls; stone cells with porous, lignified walls, and numerous resin cells with dense brownish contents.

PREPARATIONS.

In addition to the fluidextract, there are two preparations[1] which are used mainly by the French. One of these, "Pilula Potentin Composita," contains one grain of extract of Muira-Puama and one grain of ovolecithin to each pill. It is given in doses of 3 to 6 pills daily, before meals, as a nerve stimulant and aphrodisiac.

The other preparation, "Muiracethin," consists of the residue *in vacuo* of 100 grammes of fluidextract of Muira-Puama and 5 grammes of lecithin with a sufficient quantity of licorice powder to make 100 pills. The dose is given as 3 to 4 pills daily—one pill morning and noon and two pills in the evening.

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[2] Formulaire des Medicaments Nouveaux, 23d ed., 1911.

BOTANICAL RESEARCH LABORATORY,
PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE,
JULY 1, 1921.

PHARMACEUTICAL CHEMISTRY AS APPLIED TO FOOD AND FOOD ACCESSORIES.*

BY L. E. SAYRE.

One of the reasons for presenting this paper is to direct attention to the fact that pharmacy and pharmaceutical chemistry lead one into many other fields which neither the pharmacist nor the public always discerns; its value is not generally recognized. The properly trained pharmacist like the trained physician is naturally led into lines of investigation where his services are sought for and highly appreciated. It seems to the writer that we should, as a class, recognize the fact that pharmacy, like law and medicine, is progressive and that the vocation at any one time is different in its interpretation, growth in scope and inclusion as it progresses. In recent years the pharmaceutical chemist has been called upon more and more to contribute his skill and training in directions outside the consideration of drugs alone. The equipment which he has obtained in such subjects as drug and plant analyses, bacteriology, etc., make him valuable in serving, in a peculiar way, as a chemist in very many directions. The public, the physician, and all too often the pharmacists themselves fail to grasp the value of the training by which the pharmacist is able to render such services. I have frequently said

* Read before Scientific Section A. Ph. A., New Orleans Meeting, 1921.

that I would like to see pharmacy divided, even as medicine is divided, into its rational special fields of practice such as surgery, obstetrics and gynecology, internal medicine, treatment of eye, ear, throat and nose ailments. Nor is this a fanciful presumption. Such division is already being made; the college-educated pharmaceutical chemist is almost waylaid as he emerges from his trained laboratory experience and made a specialist in certain lines of work whether he wills it or not, by those who need him for the finely diversified services he can give which the purely "chemical" chemist—the mere master of chemical facts—cannot render. To the pharmacist, chemistry is not only a science, but has to him, by his application of it, become a fine art as well. The late Robert Kennedy Duncan, not by nature lavish in praise, confided to a mutual friend a "Sir Hubert" tribute, that "he was surprised at the quality of the chemical work those pharmacy students did." He meant that they mastered facts and saw the applications beyond them.

So, to some extent we really have distinct and separate divisions of pharmacy to-day. That there really are such divisions has been recently impressed on me by my having been called to render some services in connection with the administration of the Food and Drugs Law in which I have been obliged to construct methods of estimation of food accessories and certain food products. Recently, too, the writer has been asked to investigate and report on coffee substitutes, having before reported on the subject of volatile principles of coffee, which report has already been published. Another item—that of the investigation of what may be termed pie fillings—has been asked for.

It should be stated in this connection that the work on these subjects has not been sufficiently completed to make more than a preliminary report.

In the report on the Volatile Principles of Coffee, the principles investigated were those not pre-existing in the bean, such as caffeine, but those which were brought into being by the roasting process—empyreumatic and possibly, if taken in quantity, toxic.

The cereal substitutes for coffee, containing proteins, carbohydrates etc., on being roasted may also bring into existence certain obscure decomposition products which may cause more unpleasant disturbances than coffee itself.

Work on the investigation of the empyreumatic principles produced in the manufacture of these cereal beverages has been performed and a preliminary report prepared of the findings. The articles investigated were: No. 1, a pharmaceutical-laboratory-made extract of roasted coffee of known purity in scale form; and Nos. 2, 3 and 4, three cereal substitutes for coffee of trade origin. Ash determinations were made. Also examinations of the various extractions afforded by successive treatment with petroleum ether, ethyl ether, chloroform and alcohol.

The petroleum ether yielded extractive matter: No. 1, .85%; No. 2, .17%; No. 3, .15%; No. 4, .10%. The succeeding treatment with ether in the same numerical order gave .17, .13, .23, .12 percent. Chloroform: .14, .04, .11, .06 percent. Alcohol: 2.65, 3.95, 4.93, 7.16 percent.

Crudely stated, the first three solvents extracted the fats and empyreumatic bodies. The alcohol extractive represented practically the undecomposed or slightly changed cereal bodies, or slightly modified carbohydrates, sugars, and some modified intermediate bodies, dextrine-like, of starch origin.

As mentioned, this examination was merely preliminary. The alcoholic, least altered nutritive extractive bodies, would probably interest the substitute user the most. He would select the article that promised the greatest nourishment and the least of possible toxic synthetized principles. Our own deduction would have to be cautiously made in view of the fact that deductions should be arrived at after more ample and thorough investigation leading to unmistakable proof. This will serve as one example of specialized applied pharmaceutical chemistry, the commencement only of an investigation of interest to the public, but which the public hardly conceives is of pharmaceutical origin, or nature.

Applying the purity rubric to the matter of pies—couching it that way sounds pharmaceutical at least—and to the ever-willing bearer of burdens—the pharmacist—is that task allotted. The manufacturers of pies in the U. S.—especially fruit pies—have been desirous of having a standard arrived at and imposed upon all manufacturers as a part of the Food and Drugs Act. Representative manufacturers claim that at least 51% of the whole fruit should form the pie mass between the upper and lower crusts. Pie fillers are sold on the market which are condemned by the Federal Committee which administers the food and drug laws.

The problem has been to find a workable method that would be serviceable in regulating or standardizing what might be called pure pie masses or fillings. Several attempts were made to separate the pie masses (or fillings) by centrifuge after proper dilution, analyzing the solution as well as the solid centrifugalate and finally to ascertain the total moisture in the upper and lower crusts including the filling, but all efforts to secure satisfactory uniform results have not been, thus far, fully successful on any workable basis.

Since fruit pies are made from the fruit pulp which is thickened by starches of different kinds—thickened by bringing the mixture simply to the boiling point under steam heat—it has been assumed that if the percentage of starch contained in a pie filling were determined that would be a valuable, if not a satisfactory datum, as a means of comparison; therefore the present method has been used with some fairly good results, *viz.:* by using 80% alcohol to separate sucrose and fruit sugars from the analytical portions and the residue from this after inversion with hydrochloric acid, quantitatively tested to determine the inverted or converted starch by the Fehling solution method. Thus far we have been able to obtain measurable concordant results. We can only report this much of the work at present.

I might apologize for bringing before this body such an apparently unfinished work, but since the chairman of this section desired a paper from me I could think of no better way to bring before this body of pharmacists the importance of looking toward pharmacy as a calling which should require of them a degree of attainment worthy of the name "drug chemist," and that they by this means are preparing themselves for a wider sphere of influence than the so-called drug business alone, as valuable as that part of the vocation is.

I hope that some day the various interests of pharmacy may be gathered together as a unit; when the commercial lines as well as all the other of the various branches of pharmacy will take their place beside other professions which have been differentiated, and thus made more highly useful to mankind.

NOTES ON THE ASH YIELD OF CANNABIS.

BY E. L. NEWCOMB, C. E. SMYITHE AND E. R. HODEL.

There are numerous references in the literature relative to the ash yield of Cannabis. For the most part these references are not accompanied with any data relative to the amount of seed contained in the sample, the amount of the ash insoluble in 10% hydrochloric acid or any information about the general character of the drug being examined. The published data alone are of little value in determining what a practical and workable purity rubric for this drug would be.

We have attempted in this study to obtain data which would be helpful in determining proper ash standards and a satisfactory purity rubric. Commercial samples from a number of different sources have been examined. We have also examined a series of samples obtained from plants grown in the University of Minnesota Medicinal Plant Garden. Unfortunately we have not been able to obtain supplies of imported Cannabis; however, the appended compilation of the results of different workers in part makes up for this deficiency. Our results are as follows:

ASH YIELD COMMERCIAL SAMPLES OF CANNABIS.

Sample No.	Remarks.	Percent tops.	Percent seed.	Percent total ash	Percent ash insol. in HCl.
95.	Whole, Amer., bought 1921	96.0	4.0	13.73	2.97
				13.71	2.98
96.	Whole, Amer., bought 1921	97.6	2.4	12.27	2.73
				12.31	2.51
97.	Whole, Amer., bought 1921	83.4	16.6	13.92	2.45
				13.84	1.91
111.	Tops only from No. 97	....	....	14.67	2.17
				14.63	1.84
101.	Whole, Amer., bought 1921	70.0	30.0	13.56	3.48
				13.14	3.31
113.	Tops only from No. 101	....	....	16.81	3.69
				16.44	3.18
112.	Old sample commercial powder	....	....	16.94	7.13
				16.81	6.63
100.	Cannabis Seed, powd. in this Laboratory	....	....	6.14	1.91
				6.06	2.12
98.	Cannabis Seed, powd. in this Laboratory	....	....	5.93	....
				5.87	1.96

ASH YIELD OF CANNABIS GROWN IN MINNESOTA.

The following figures relate to Minnesota grown Cannabis. The drug was collected in the fall of the year, usually the latter part of September or the first of October, the collecting being done by students. The wild plants grow abundantly in this vicinity and hence it is almost impossible to prevent pollination.

The Garden soil is sandy loam. Clouds of dust blow through the Garden during dry spells. The fine sand sticks to the Cannabis tops. The tops were carefully collected and dried but our ash tests indicate that there is much adhering sand. Due to our inability to remove all staminate plants in the vicinity, seed in varying amounts was always present. If the collection is late in the season we find that the birds have usually taken most of the seed. The Minnesota drug

is therapeutically active, but considerably more than the present U. S. P. standard dose is required to produce incoördination in a susceptible dog. We have found this to be true with many other samples.

Minnesota cannabis

Samples.	Remarks.	Percent tops.	Percent seed.	Percent total ash.	Percent ash insol. in HCl.
103.	Univ. of Minn., tops only, 1910 crop ..	....	....	18.04	4.91
				17.57	4.15
104.	Univ. of Minn., tops only, 1910 crop,			16.22	3.17
	exhausted with alcohol.....	....	....	16.23	2.88
115.	1913 crop, whole drug, tops and seed..	79.0	21.0	16.08	4.28
				15.96	4.29
116.	Tops only from No. 115.....	....	....	17.88	4.08
				18.00	4.405
94.	1914 crop, tops and seed.....	50.0	50.0	13.48	2.94
106.	1914 crop, tops only from No. 94.....	....	....	15.58	2.72
				15.70	3.47
99.	1915 crop, tops and seed.....	80.8	19.2	15.85	4.58
				16.02	3.97
114.	1915 crop, tops only from No. 99.....	....	....	17.57	4.54
				17.49	5.13
102.	1918 crop, practically no seed.....	....	....	17.31	2.53
				17.91	5.02
117.	1919 crop, tops and seed.....	90.0	10.0	17.16	4.42
				17.18	4.89
118.	1919 crop, tops only from No. 117...	....	....	17.34	3.96
				17.49	3.83
119.	1920 crop, tops and seed.....	93.0	7.0	17.75	4.23
				17.52	3.72
120.	1920 crop, tops only from No. 119...	....	....	18.20	4.11
				18.00	3.69

The seed was separated by rubbing the whole drug over a screen having meshes of a size sufficient to prevent the seed passing through. A subsequent winnowing completed the separation.

The results of these tests would indicate that under conditions of cultivation it might be quite impossible to meet the present ash standard of 15 percent. On the other hand present commercial samples of American Cannabis appear to usually come within the standard. Some of the high ash contents reported may be due to the same trouble we have of sand sticking to the growing plant.

COMPILED DATA RE ASH YIELD OF CANNABIS.

	Percent total ash.	
Rippetoe & Minor, *A. J. P.*, Vol. 84, p. 437.	14.44	
Cannabis Indica.....	14.20	
Rippetoe, Smith, Taylor & Stoddart, *A. J. P.*, Vol. 86, p. 437		
Cannabis Americana, 46.75% seed.....	8.20	46.75% seeds
" " seeds.....	4.25	
" " seedless.....	11.60	

	Percent total ash	
Cannabis Indica	13.82	7.35% seeds
" "	13.05	4.16% "
" "	15.05	4.41% "
" "	14.20	5.76% "
" "	14.70	4.50% "
" "	14.50	5.30% "
" "	13.80	9.40% "
" "	13.20	2.55% "
" "	13.30	3.88% "
Maines, E. L., JOUR. A. PH. A., Vol. 3, p. 424.		
Cannabis, African	18.80	
" India	14.00 to 20.80	
LaWall, C. H., PROCEEDINGS A. PH. A., Vol. 58, p. 751.		
Cannabis Indica	24.00, 18.04, 14.80, 9.60	
Digest of Comments on U. S. P. & N. F.		
1906—Roder, P.—Indian Cannabis	13.94	
1907— " " " "	16.68—4 samples, 12.56 to 14.77	
1909—Evans Sons Lescher & Webb, report one sample yielding	16.44	
1912—Riedel, J. D.* Cannabis, total ash	6.0 to 7.1; acid insol. 2.4	
Nitardy, F. W., "U. S. P. Bul. Sub-Comm. No. 5," p. 27	12.0, 14.7	

*Probably seed.

The use of American Cannabis has developed within the last few years. The above quoted results are almost entirely on the imported drug. Manufacturers report at this time that the American drug has almost entirely replaced the imported article. The results of this work seem to make it advisable that an acid-insoluble ash standard be adopted for Cannabis. Probably 4 or 4.5 percent would be satisfactory. The present standard of not more than 10 percent of fruits, seeds and other organic foreign matter should be retained and made more stringent, if conditions will permit.

DEPARTMENT OF PHARMACOGNOSY,
COLLEGE OF PHARMACY, UNIV. OF MINN.

THE SIGNIFICANCE OF EDUCATION.*

BY WILLIAM H. CARPENTER,[1] PH.D.

In making any definition of education, or in attempting any predication of its purpose and results, we must, of course, at the beginning fully recognize the fact that in the life of the professional man, the lawyer, the physician, or the pharmacist, there are two elements involved, his education in his profession, on the one side, and his liberal education, on the other, or what we might properly call, at least from a certain standpoint, his special and his general education. My contention

* Parts of an address delivered at the Centennial Exercises of the Philadelphia College of Pharmacy and Science, June 14, 1921. Reprinted from *American Journal of Pharmacy*, August 1921.

[1] Provost of Columbia University.

is that not for a moment is there any actual line of demarcation between the two. They are like two states of matter in flux that flow into each other until the whole is permeated by both and a new compound is formed that partakes of the nature of both elements, but yet in the end is neither. The lines of a professional education at the present time in its narrow sense of a special training for the practice of some one of its many phases are as a general thing well laid down, and the professional schools of the country of the best sort are more adequate in their equipment of men and methods and more reasonably sure of the competency of their professional product to understand and to cope with the problems of practice than ever before in our history. This is, however, but one part of the problem of education, for a man, and we must now be careful to say, in her share in the practice of the professions, a woman, who is trained in a profession alone, and no matter what that particular profession may be, is only half educated, for another half essentially important has been neglected. I should greatly doubt, however, when all is said, that any one of the good professional schools now walks consciously into such a slough of despond as to make its courses of instruction purely professional and nothing else, or at least does not base its professional training as a climax of formal education upon a basis of general culture. There are, nevertheless, from the very nature of the case, temptations to do so that must be borne in mind in the organization and conduct of every professional school, whether pharmacy, law, or medicine, or any other, that must be counteracted and discouraged. There is an insistent demand in an age that is distinctly materialistic for material results, and, in the characteristic hurry of the time, for their rapid production, and the young men and young women who are to go out into the world in the practice of a profession for themselves are confronted with a period of preparation, if care is not taken, too prolonged in age and expense to make it possible of accomplishment. These are real difficulties that confront every professional school in the proper carrying out of a scheme of education, and yet they must be rationally met or else that school has only half done its duty to those whom it has stamped with its approval at the end of its teaching. It may be true that the school in question has prepared its graduates to make a living, which, to be sure, is one of the ends of existence and a very important end indeed, since a good deal depends upon it for the part you play or even whether you are alive or dead, but in the more perfect equipment for life, and that is what we are considering, the fact of merely being able to make a living, although it is essential to most of us, or the acquisition of wealth which is but its sublimation, is but one element and not the only one in the whole plan of existence, for the end of all real education is not to make a living, but to live!

And what about this other half in a scheme of education, concerning which we have been talking with such confidence as an element of human life? A wise man has said that "the aim of education is the knowledge not of facts, but of values," in the sense that "values are facts apprehended in their relation to each other, and to ourselves." The matter could not have been better stated, for it is certain that the mere accumulation of facts, whatsoever kind they may be, does not constitute an education, or knowledge of them an educated man. It plays no part to you or to me as a criterion of education, as it is sometimes made to appear, whether

we know any part or all of a long list of what is, after all, but the uncorrelated material of education, and not the thing itself in its relationships and its proper adjustments into a body of knowledge which shall constitute a cultural whole. A man may have read through the whole *Encyclopedia Britannica* and have remembered its facts, and yet have failed wholly in securing an education in any real sense. Facts are no doubt the basis in essential ways of education. This is particularly true of the strictly professional part of education, where of necessity facts are the very bricks and mortar on which the superstructure of professional knowledge is built, but this presupposes no heterogeneous collection of the odds and ends of knowledge, but of the evaluation of the many facts with which a profession is necessarily concerned in their relation to each other and their fusion together into a connected product of immensely increased importance because of its cumulative force.

As to the true content of what is usually called a liberal education, although only too often it is illiberal in nature and amount, I again hold no specific brief. I have, however, a very definite opinion of what should constitute in the end that education which it is desirable to attain in order to give it its true significance in a scheme of living. Herbert Spencer's famous definition of biological life, "The continuous adjustment of internal relations to external relations," is much more widely applicable than to the mere functional existence of the body, for it applies alike to the mind and soul of man, and it is the great and transcendent purpose of a true education to awaken the mind and soul and to bring them into harmony and adjustment with the conditions of life.

Education, then, is not mere instruction in the subjects of the school or college curriculum, whatever they may be, science, the classics, mathematics, literature, or history. These in proper balance are no doubt, in some measure or other, the legitimate means to an end, but they are that only in their proper function as factors in a combined result more important than any one of them. And just where the emphasis in subject instruction should lie I do not know, and the schoolmen themselves who are most directly concerned with this phase of formal education are by no means agreed as to what the ultimate worth to a trained mind this or that subject should be. The field is so broad that it is only possible to delimit and choose, but the choice need not necessarily be in every instance the same, and doubtless at the best, and whatever has been chosen, it will only partially accomplish its object. I am not like the Scotchman of ancient memory who was open to conviction, but would like to see the man who could convince him, or the man who liked any color so long as it was red. My own preference would be the classics, for I am old-fashioned, a science, because I believe in the new, English language and literature, a modicum of mathematics and a good deal of history, but I am open to conviction that that is not the only way to state the case, and that under the special circumstances at hand other subjects, in other proportions, might be selected as well.

The end, however, of a formal education is clear. It is so to train the mind and the soul that there shall be a foundation at least of the true appreciation of the values of the things of life. No one is, of course, educated in school or college,

for education never ceases, now or at any time, in the normal existence of the individual. The student in the story that I have always considered somewhat apocryphal who rushed out of his college Commencement waving his diploma in the air and shouting : "Thank God, I am educated!" was entirely too sanguine of the actual result that had been attained even by a college course. The story does not tell of his future history, but I greatly fear that it was one of disillusionment, for he surely must soon have realized that he was only at the beginning and not the end of an unceasing quest.

It is the province of education to point out the direction of the quest for knowledge and for the truth that ages ago it was said "shall make you free"—free to discriminate between the true and the false wherever they may appear, in the narrower ethics of the practice of a particular profession as well as in the broader affairs of civic and national life; free to discover and to understand the false claims of charlatanism in all phases of life and in whatsoever guise, or disguise, they may clothe themselves for the befoolment of the crowd; free to value at their real worth the passing fads and foibles of the moment that are but the froth borne along on the top of the wave that presently will recede and leave the wider surface unruffled as before; in other words, free to recognize that truth, and truth only, is eternal, and that all else sooner or later in God's good time disappears wholly from the sight of men, that it ultimately vanishes—an intangible shadow without substance or reality—back into the infinite space from which it momentarily has emerged and is forgotten!

There has been no greater need at any time of the educated man, and no time like the present time to keep these things in mind. I have always remembered a phrase used by President Butler in the address delivered at the Columbia Commencement of 1917. At that time, the Great War was still in its throes of death and destruction, but it was pointed out by the speaker that the world was more than a world at war, it was a world in ferment. What he meant was that the political and social conditions that always follow in the wake of war, and as a consequence of it, were like the chemical decomposition of an organic compound, and veritably were in a state of fermentation.

What was said then in the midst of the mighty struggle that was still going on is unfortunately as true to-day as upon the day on which it was spoken. The world is still in ferment. Old standards of conduct have been obscured, and sometimes forgotten. Old ideas of duty have apparently been laid aside. Old traditions of righteousness have been displaced in high places. New ideas of individualism and self-determination have swept away the multitude, and a new world, in many respects unlike the old, has taken its place. In spite, however, of all that is new and disturbing in conditions of the present which have followed as a natural consequence the destructive forces of the war, destructive to human conditions as well as to human life, there are still in the new world that has come about the same fundamental standards of life and living. Whatever has been instilled and whatever has been lost, there are still as deeply intrenched as ever the eternal verities that are the basis of human action. Truth may be obscured, but it is not destroyed; honesty may be in eclipse, but it is only hidden; personal conduct that

controls the souls of men remains as it ever was, the fundamental fact of human and social existence. However much things seem to be in disorder and standards appear to be destroyed, at the bottom there is still the same basis of human action—action *as* an individual in living his own life for himself, action *in* the individual as he is a constituent and component part of the nation in which he lives. However the world may change, and however it has changed within your memory and mine, this is the fact that must remain still firmly fixed in our minds, that the old rules of conduct in the things of the mind and the soul are still always as they have been, and that these new conditions that confront us are often but the froth of the ferment, and the real, the fundamental facts of existence still remain, and will always remain the same. Life, as we have said, is infinitely more than organic existence. The life of all who are living to-day to enter into its fullest appreciation is not only the life of the body, but it is the life of the soul of man with its aspirations, its longings for results, its sacrifices and its achievements, and the men and women who go out into this new world from the professional schools to take their place in it should be equipped not only with a knowledge of the profession which they may have chosen for their own, but equipped also, as I think, with a knowledge of the value of the things of life to themselves as individuals, as I have tried to state it, and to the society in which they are to live and to act as its responsible members, and it should not be forgotten that these fundamental things that I have called to mind are the real conditions of a rational existence.

An individualism that thinks only of self and a determination that has only self for its object is, however, but half of the duty of man. A thought of self is necessary for self-preservation as a fundamental fact of existence, but the mind that stops there has only realized a part of the supreme significance of life, which not merely takes account of the individual to himself, but also in a broad and enlightened spirit makes him to himself a constituent and militant part of his environment and of his place in human society. In the background of it all is still, of course, the professional calling of the individual. A great philosopher, Francis Bacon, three centuries back expressed this matter in terms that cannot be better stated today: "I hold every man a debtor to his profession, from the which, as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves . . . to be a help and ornament thereunto." There can be, however, no thought to live for it alone, because, in the end, it is only one of the manifold parts of life.

A real education is more than a special equipment in any single direction of human energy, and its intention is to unfold to its highest potentiality the nature of man. The best definition that I have ever read of the true significance of such an education to the man who wears it as his crown of accomplishment is that contained in Huxley's "Essays," from which I copied it many years ago and have kept in sight as a precious possession. It is only a part of a longer statement of the position of man in the universe and his relation to it, but it bears directly on the present case, and this is what he says:

"That man, I think, has had a liberal education, who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure

all the work that as a mechanism it is capable of; whose intellect is a clear, cold logic engine, with all its parts of equal strength, and in smooth, working order; ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of great and fundamental truths of nature and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself."

AS OTHERS SEE US.*

BY L. E. SAYRE.

It is sometimes quite profitable for one to look at himself as others see him. Like Dr. Jekyl and Mr. Hyde we are said to have two natures, and it is always pleasant if the observer sees the bright side. No matter, we get a better perspective of ourselves even if the focus is concentrated upon the cloudy side of our personality. It is the same with institutions as with individuals.

Our institution, I mean the American Pharmaceutical Association, has its outside and inside critics who see us from a different angle from that of many others who are equally interested in the development of the Association.

Some of our critics who are prone to emphasize what they consider faults, characterized as lack of commercial interest, be it said have as much at heart the interest and growth of pharmacy as those who see no occasion to do otherwise than focus their attention upon what they consider the professional and altruistic side, believing that this policy leads to that kind of progress for which the Association stands and that commercial faults, if any, are sure to take care of themselves. Professional pharmacy claims the support and patronage of the commercial group of the vocation. The professional side of any vocation is more difficult to sustain than the commercial side. This will, perhaps, be conceded. Institutions, like individuals, are inclined to be materialistic. Commercialism in pharmacy is a sturdy and vigorous wrestler, while professionalism, in its very nature, is directly the very opposite. It seems to claim the right of calling, in time of need, for the help of the sturdy commercialist. Indeed commercialism and professionalism are so interdependent in pharmacy that one cannot well do without the other.

These prefatory remarks are made to pave the way for what the writer may be permitted to say in regard to that which he feels should be said at this period—a critical period—in the life of our Association. It seems to him that the Association has come to a time when more attention should be manifested by others than those who are now carrying the burden, in what is termed professional pharmacy—this being the selected field for this organization. Looking toward the future it seems that the younger and newer element, which, fortunately, is rapidly growing, should enter upon a vigorous campaign of patronage and support of this aim and purpose. While the membership includes all branches and phases of pharmacy, the various groups are tacitly, at least, advocates and defenders

* Read before Section on Education and Legislation, A. Ph. A., New Orleans meeting, 1921.

of the fundamental and vital aims and purposes for which our institution stands. Those who, for various reasons, cannot be active, are silent partners in professional work. The disparagement of this essential element, and the lowering of this high purpose, would be suicidal, not only to the Association but to all the ramifications of pharmacy.

A prominent legislator, in reply to my request for his support of a measure of special interest to retail pharmacists, said: "I have a kindly feeling toward the druggist and have respect for his calling, but I do not see why he should ask for special legislation. He is not really a producer of medicines, and his lack of interest in the science of his vocation is quite apparent. He seems to be simply a retailer of manufactured goods."

This remark—while I put up an argument in rebuttal, directing his attention to the work of this representative association, state associations, etc.—made me painfully conscious of the manner in which the outsider formed an estimate of the pharmaceutical profession, in other words, "*As Others See Us.*"

In one of the recent numbers of a prominent pharmaceutical journal there is published what may be said to be a symposium of the physicians' estimate of the pharmaceutical profession. This symposium is quite illuminating. It gives some idea of the point of view of physicians—in other words, *As They See Us.*

It is encouraging to note that, in this symposium, we have, as a rule, a liberal and generous consideration. Quoting one remark, from one of the representative contributors, he says: "Physicians must grant to the pharmacist all the respect, esteem and deference due to a professional man. They must not look upon him as an ordinary man of business, but must consider his profession on equal standing with their own."

It is needless to say, perhaps, this generous estimate of pharmacy is not shared by the medical profession as a whole, but it is to be hoped that the time will come when the medical profession, as a body, as well as the public, will be as broad-minded and as liberal as the contributor above quoted.

The burden of this paper is a plea for a greater and wider support of professional pharmacy. Our reputation depends upon professional work, upon professional spirit for which this Association stands. The better this is upheld and sustained the greater and more rapid will be the progress of pharmacy in all of its ramifications.

LIQUOR ANTISEPTICUS ALKALINUS AND LIQUOR ANTISEPTICUS.*

BY K. A. BARTLETT.

Both of the above preparations have been the subject of considerable discussion. There seems to be no unity of opinion regarding them, and due to the general difference of opinion, the writer took the subjects in hand for investigation.

After devoting a great deal of time to the work and carrying out numerous experiments on the present formula as well as many modifications of them, some definite conclusions have been reached. In setting forth the results it will in all probability be best to treat the preparations separately.

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* Read before Section on Practical Pharmacy and Dispensing A. Ph. A., New Orleans meeting, 1921.

LIQUOR ANTISEPTICUS ALKALINUS.

This preparation was official in the N. F. III and was carried to the N. F. IV. with but two minor changes. One, the replacing of Tincture Cudbear by Powdered Cudbear, which was a constructive change, and the other the replacing of Magnesium Carbonate with Talc, which change seems to make very little difference either way, the writer preferring Talc.

But as aforesaid, these changes were minor and what seems to be the chief objections to the formula were not remedied. Dr. LaWall back in 1914 presented an article calling attention to the faults of this preparation, which seem to be, its unnecessarily high total solid content, its excessive alkalinity, and its rather unpleasant taste. Upon examination, the above-mentioned faults seem to be substantiated. A number of experiments were carried out and the following formula was devised which seems to remedy the faults of the present formula and to offer a pleasant and effective preparation. It has been used quite extensively and favorably commented on by all who have used it.

Sodium Salicylate	10.	Gm.
Sodium Benzoate	10.	Gm.
Sodium Borate	20.	Gm.
Thymol	0.5	Gm.
Eucalyptol	1.	mil.
Methyl Salicylate	0.5	Gm.
Cudbear	2.	Gm.
Alcohol	50.	mils.
Glycerin	100.	mils.
Talc	10.	Gm.
Water.....q.s. ad	1000.	mils.

Dissolve the Sodium Salicylate, Sodium Benzoate and Sodium Borate in 500 Cc. of water. Dissolve the Thymol, Eucalyptol and Methyl Salicylate in the Alcohol. Mix the two solutions adding the aqueous to the alcoholic, then add the Glycerin, Cudbear, Talc, and Water q. s. ad. 1000 mils. Let stand 24 hours and filter, returning the first portions until the filtrate comes brilliantly clear.

The principal differences between this formula and the present official one are; the elimination of potassium bicarbonate, which seems to be the chief cause of the unpleasant alkaline taste, the dropping of oil of peppermint, which detracts rather than adds to the flavor, a slight decrease in the alcohol and glycerin content and an increase in the thymol, eucalyptol and methyl salicylate.

In a comparison of the two formulas as regards alkalinity, they were both checked against $\frac{N}{1}$ H_2SO_4, the N. F. IV formula requiring 0.6 Cc. of $\frac{N}{1}$ H_2SO_4 to neutralize 1 Cc. of it, and the above formula requiring 0.11 Cc. of $\frac{N}{1}$ H_2SO_4 to neutralize.

A comparison of the two formulas will show an obvious cut in the total solid content.

LIQUOR ANTISEPTICUS N. F. IV.

Some have raised objections to this formula on the basis that it does not stay clear. After experimenting with the formula, the writer has reached the conclusion that any trouble with it must be due to lack of care in compounding.

One might be led to believe that the eucalyptol and possibly some of the other

antiseptics were present in too large quantities, as they do not all go into solution and an appreciable amount of them filter out. However, these quantities seem to be essential to get the desired flavor in the finished preparation. Cutting down the oil quantities lessens the excess amount of oil but it very materially changes the flavor, so that such a procedure is not advisable.

This excess oil is in all probability the cause of trouble with the formula. If after the preparation is put on the filter, it is allowed to drain thoroughly, a portion of this oil will pass through the filter and will sooner or later cause a clouding of the preparation. There are only two ways of overcoming this difficulty; one is by carefully watching the filters and removing them before the excess oil has a chance to pass into the finished preparation, and the other, to use sufficient additional filtering medium (talc or kieselguhr) to completely absorb this excess oil and prevent its passing through the filter.

If the above precautions are borne in mind no difficulty should be experienced in making a satisfactory preparation by the formula of the N. F. IV.

LABORATORIES OF
E. R. SQUIBB & SONS,
BROOKLYN, N. Y.

FURTHER NOTES ON TINCTURE OF CANTHARIDES.*

BY F. W. NITARDY.

At the 1919 meeting of the American Pharmaceutical Association in New York City I presented before this section a paper on Tincture Cantharides[1] in which I recommended for consideration in the U. S. P. X, a preparation made by exhausting the drug with a hydro-alcoholic menstruum and the aid of sufficient potassium hydroxide to saponify the oil in the drug and combine with the cantharidin present. By referring to this paper[1] you will note that the inability to produce an active tincture by the U. S. P. IX method or find an active tincture on the market, led to the investigation of the alkali method which had been recommended by Dr. E. R. Squibb many years ago.

Satisfactory results were obtained from the method referred to, not only in experimental lots but also in large scale production. In all seven large lots were made between September 1918 and February 1921, all of which showed blistering power. In some instances the tincture itself when applied to the skin would blister, in some instances it had to be concentrated somewhat in order to give good results.

Since early in this year, however, several lots have been obtained which show no blistering power when concentrated, even though the drug showed satisfactory cantharidin content on assay. Strange to say, some of the lots of drug which failed to give an active tincture with the alkaline menstruum did yield a good tincture by the U. S. P. IX method; a situation just the reverse of that previously experienced.

I feel obliged, therefore to withdraw my suggestion of two years ago as it now appears that neither the method proposed in my previous paper nor the U. S. P. IX method will give satisfactory results at all times or under all conditions. The whole situation evidently requires further investigation.

I am sorry that I can offer no explanation at this time for the unsatisfactory results obtained, but hope to make a further report on this subject at a later date.

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[1] Read before Section on Practical Pharmacy and Dispensing, New Orleans meeting, 1921.

[2] Journal A. Ph. A., December 1919, p. 1030.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Conducted by H. V. Arny, Reporter on the Progress of Pharmacy, Chairman of the Committee on Research.

On these pages, each month, will be found a list of articles on Pharmaceutical research that appear in the pharmaceutical and other scientific journals of the world. Whenever possible, the list appearing a certain month will record articles appearing in American journals of the preceding month and articles appearing in foreign journals will be recorded as quickly as possible after the journals reach the Reporter.

All articles appearing in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which will be issued as soon after the end of the year represented as editing and printing conditions permit. Those desiring abstracts immediately can obtain same for a fee of one dollar each by communicating with H. V. Arny, 115 West 68th St., New York, and arrangements can also be made for securing photographic reproduction of entire articles at moderate prices when such are desired.

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COMMITTEE REPORTS

REPORT OF THE CHAIRMAN OF THE FAIRCHILD SCHOLARSHIP COMMITTEE.

To the Joint Meeting of

The American Conference of Pharmaceutical Faculties,
The National Association of Boards of Pharmacy, and
The Section on Education and Legislation, A. Ph. A.:

The Schools and Colleges of Pharmacy belonging to the American Conference of Pharmaceutical Faculties were advised March 9th that examinations for the award of the Fairchild Scholarship were to be governed by the recommendations unanimously adopted at the New York A. Ph. A. meeting at the Joint Session of the bodies here represented. The letter reads:—

> "The Fairchild Scholarship is to be awarded by a competitive examinaton to candidates who are High School graduates, and who have completed their first year work in a School or College of Pharmacy, member of the American Conference of Pharmaceutical Faculties, and each School or College shall be limited to two candidates."

The schools were asked whether they would have candidates, and what date would suit best for holding the examination. June 11th was decided on as the date most convenient for the majority of schools having candidates.

A letter accompanied the questions, which were sent by registered mail. The letter reads:—

"The Dean:—

"The questions herewith are placed in your care, and the candidates of your school for the Fairchild Scholarship are under your supervision.

"The examinations are to be held on June 11th. The candidates are to be High School graduates and students who have completed one year (not more) in a School or College of Pharmacy, member of the American Conference of Pharmaceutical Faculties.

"Only the questions of one subject are to be given the candidate at one time. When he is through with these, the questions and the candidate's answers are pinned together, marked, and taken charge of by the Dean or his representative. The questions of another subject are then given the candidate, and so on until the work has been completed.

"The questions used by the candidate, and his answers, with identification mark (not his name), should be promptly sent to the undersigned, by registered mail; the name of the candidate together with the identification mark, should be inserted in a smaller envelope and also enclosed. The Chairman will retain the name and the identification mark; the questions and answers will be sent by him to the Examining Committee on Questions, who will not know the name nor School of candidate."

The Chairman's intention, which was perhaps not clearly stated, was to have each set of questions and answers in a separate envelope, and to come by registered mail, so that each envelope would speak for one candidate. The explanation is now made for future examinations.

Dean C. B. Jordan, in the second paragraph of his letter in reply to the Chairman's letter, said:—

> "I raised the question in order that the matter may be made clear. I firmly believe that no one who has had more than one year of training in a College of Pharmacy should be permitted to take this examination. I hope that you will supplement your directions to the other Colleges making this point clear, so that all applicants will be upon an equal footing."

Professor E. A. Ruddiman, assisted by Dr. J. H. Ransom, of Detroit, prepared the questions, which related to Pharmacy, Pharmaceutical Arithmetic, Pharmacognosy and Materia Medica, and Chemistry. It was contemplated to have questions on Physiology and Botany.

Our records show that there were 31 candidates and 19 schools were represented, and an analysis of the averages made will be appended.

A number of objections have been raised to the inclusion of Materia Medica, as that in a number of schools is taught in the second year. In a number of examinations this has been evident.

This was also expressed by Prof. E. F. Kelly, who examined the papers, with the assistance of Dr. H. E. Wich, Associate Professor of Chemistry, School of Pharmacy, University of Maryland, Miss B. Olive Cole, Associate Professor of Botany and Materia Medica, and John C. Krantz, Jr., Associate Professor in Pharmacy, in the same institution. Professor Kelly stated that the questions asked in Pharmacognosy and Materia Medica were beyond the training received in the first year, and his further comment in connection with the examination was as follows:

"It is our impression that the information necessary to answer some of the questions asked would hardly be imparted to students in the first year course in pharmacy adhering to the Pharmaceutical Syllabus."

Your suggestions along these lines would help the Fairchild Scholarship Committee, and it would be helpful in preparing Examination Questions. What other subjects should be included? The Chairman believes the examination should extend over a period of two days; Dr. E. A. Ruddiman suggested that this be arranged for hereafter, and the request is made that this be given consideration, and also the fixing of a time for holding the examination, as the first, second, third or fourth Monday (or any other day of the week) of June.

There is another matter that should receive consideration, namely, when the Scholarship was offered it was to a young man who had never attended a school of pharmacy, and the sum was sufficient to pay for both terms of the two-year course. Now, however, it is given to one who has already completed the first year, and the sum is more than necessary for the second year. Should the amount be divided between two students or should this amount be a rebate to the young man or woman and the other portion for the coming year, or should part of the money be used in defraying the expenses of the second year and the other for post-graduate work? We are endeavoring to get on a basis which will be generally satisfactory to all the schools of the Conference, or as nearly so as possible. Interest has been shown this year by quite a number of applicants.

No arrangements have been made for defraying the necessary expenses of the examination. The work has been done by members gladly giving their time, and thanks and appreciation of their services are tendered; these have also been communicated in letters.

Expenses must of necessity be incurred for mimeographing the questions and for postage and registration; these need not be more than $20.00.

The Chairman has done the best he could, and gladly gives his services, and expresses his appreciation for coöperation and support. The number of candidates who presented themselves for the examination is encouraging and their interest is appreciated.

Respectfully submitted,

E. G. EBERLE.

Chairman Fairchild Scholarship Committee.

Analysis of the Fairchild Scholarship Examinations for 1921.

The wor . of the Examination Committee shows painstaking care throughout, and in all details. The members of the School conducting the examination had no candidate, they had only the keys to the names of the candidates, were not acquainted with the candidates nor the schools which they attended.

The highest record made by any one candidate, and only one—there was no tie—according to the report of the Committee, was 83.3 in Pharmacy, 100 in Pharmaceutical Arithmetic, 93 in Chemistry, 96 in Materia Medica, an average in all branches of somewhat over 93; the highest record in each branch and in general average.

The next highest had 82.5 in Pharmacy, 91 in Pharmaceutical Arithmetic, 91.5 in Chemistry, 84 in Materia Medica, or an average of 87.25 in all branches. The next two candidates averaged slightly above 80. Then there were eight candidates who ranged in the 70's.

The average of all candidates in Pharmacy was 59.5. Ten fell below this average, the lowest making only 18, and the highest 83.3. The average in Pharmaceutical Arithmetic was 68.6, and twelve fell below the average. The average in Chemistry was 71.8, and fifteen fell below that average. The average in Materia Medica was 58.5, and sixteen fell below. The

first sixteen averaged in Pharmacy 71.4, in Pharmaceutical Arithmetic 81, in Chemistry 80, and in Materia Medica 70. The last fifteen averaged in Pharmacy 46.85, in Pharmaceutical Arithmetic 65, in Chemistry 63.5 and in Materia Medica 46.9.

There were 19 schools represented, and 31 candidates.

The name of the one to whom award has been made will be announced as soon as a complete record of the applicant has been received.*

SYNOPSIS OF PROCEEDINGS OF THE EIGHTEENTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, HELD IN NEW ORLEANS LA., SEPTEMBER 5-6, 1921.

BY H. C. CHRISTENSEN, SECRETARY.

The Eighteenth Annual Convention of the National Association of Boards of Pharmacy was called to order by President Charles Gietner, at 10:00 o'clock, Monday morning, September 5, 1921, in Parlor E, Mezzanine Floor, Grunewald Hotel, New Orleans, Louisiana.

The following twenty-eight states were represented by a total of about sixty delegates and associate delegates: Alabama, Colorado, Connecticut, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Wisconsin.

The two features of the Convention which stand out most prominently and around which nearly all discussions and deliberations centered, were, first, the activities of the Association under the districts plan, which was adopted last year, and, second, the report presented by Mr. L. L. Walton, Chairman of the Committee on Standards, with recommendations for changes in the now-existing state pharmacy laws and State Board of Pharmacy rulings, relative to the number of years of practical experience required for entrance to State Board Examination for license as pharmacist, the character and scope of such experience and method of computing.

With reference to the first—the activities of the Association under the districts plan, the country has been divided into nine districts each with five to six states and each having a vice-president elected who is also Chairman of his district. The district vice-presidents or Chairmen, nine in all, also constitute the Advisory Examination Committee, with the Secretary of the Association as Chairman.

During the past year, one meeting was held in each district, at which—with few exceptions—the state boards of the respective districts were represented by one or more delegates. The President and the Secretary of the Association, one or the other, usually both, attended the district meetings. All meetings were full of interest, and with the closer coöperation between states, it is expected that much good to pharmacy will result in the future from work under this plan. It is expected that a meeting of the District vice-president members of the Advisory Examination Committee will be held in Chicago some time in February, at which the program for future activities will be outlined. This will include plans for carrying on an active campaign for college of pharmacy graduation, prerequisite laws in states where such laws are not now in force, the adoption of high school graduation requirements, more general uniformity in state pharmacy laws, uniformity in examination questions and methods, consideration of a basis for recognition of schools and colleges of pharmacy, etc.

Referring to the Advisory Examination Committee as now constituted, the Chairman of this Committee, in his report, states in part as follows:

"It is apparent at a glance that the increase in membership of the Advisory Examination Committee, under this districts plan, the geographical distribution, and the fact that each vice-president has a pride and responsibility in his district, will bring about, or has brought about a condition which cannot but give us a more virile, energetic and constructive Committee. * * * *"

REPORT OF THE COMMITTEE ON PRACTICAL EXPERIENCE.

In the introductory paragraph of his Report, Chairman L. L. Walton states: "Your Committee has carefully considered the practical experience now obtainable in the average retail drug store, the amount and character of service therein, which should be accepted by boards of pharmacy as qualifying a candidate for pharmacy licensure under an experience prerequisite"—

*The announcement is made under Personal and News Items.

including experience in drug stores, dispensaries of regularly chartered public hospitals or in the hospital corps of the United States Army, or the United States Navy, acquired while under the immediate supervision of a registered pharmacist—"and methods for certifying and crediting the same."

Chairman Walton pointed out that—"marked changes are observed in the practice of pharmacy and the conduct of the retail drug business since the enactment of our first pharmacy laws. He presented recommendations for legislative measures:

RECOMMENDATION No. 1.

That not less than 2 years of practical experience, at least one year of which shall have been gained in a retail pharmacy located in the United States, its geographical possessions, or the District of Columbia, be adopted as the legal practical experience requirement by the states requiring prerequisite graduation from a reputable college of pharmacy for pharmacy licensure. The experience shall have been obtained while under the immediate supervision of a registered pharmacist, and shall be confined to work directly related to selling drugs and poisons, compounding of pharmaceutical preparations and physicians' prescriptions, and keeping records and making reports required under state and federal statutes.

RECOMMENDATION No. 2.

The graduates in pharmacy who are candidates for registration in states which have not adopted the college of pharmacy graduation prerequisite, be admitted to the pharmacy licensing examinations in these states upon qualifying in accordance with the practical experience requirement of Recommendation No. 1.

RECOMMENDATION No. 3.

That experience in compounding physicians' prescriptions and dispensing and preparing medicines in the dispensary of a regularly chartered public hospital or other institution, or in the hospital corps of the United States Army, or the United States Navy, acquired while under the immediate supervision of a registered pharmacist, be recognized and credited in accordance with such values as may be fixed in each case by this Association; provided, however, that not less than one year of practical experience has also been acquired in a retail drug store as specified in Recommendation No. 1.

RECOMMENDATION No. 4.

That a Unit System for crediting practical experience be adopted, in which 60 units shall represent one year of practical experience consisting of not less than 2500 hours of the kind of work described in Recommendation No. 1 and performed in accordance therewith. No greater credit to be allowed for experience in calendar year, or in any period of 365 days, than 2500 hours. No credit to be allowed any candidate for registration for work performed prior to his 15th birthday.

RECOMMENDATION No. 5.

That an experience credit of 30 units be allowed for a year's work as specified in Recommendation No. 3 performed in a public hospital; 20 units for a year's work in the hospital corps of the U. S. Army, or U. S. Navy; and that no experience credit shall be allowed for pharmaceutical work performed in other places than the foregoing and the retail drug store.

RECOMMENDATION No. 6.

That the present blanket method of certifying practical experience of applicants in terms of time employed in a drug store, regardless of the character of work performed, be abandoned and no longer accepted as satisfactory evidence of pharmaceutical experience.

RECOMMENDATION No. 7.

That the forms for certifying practical experience of candidates to be used in the future shall provide evidence under oath of actual pharmaceutical service, consisting specifically of work relating directly to the preparation, handling, storing, dis-

pensing and selling of drugs, medicines and poisons, and of compounding physicians' prescriptions; and shall also specify the number of hours thus employed, per week, and the date thereof. The registered pharmacist under whose supervision the candidate worked must make the certification.

Your Committee is of the opinion that the boards of pharmacy of states which do not have college of pharmacy graduation as prerequisite, should make no change in the period of practical experience required, except as provided in Recommendation No. 2, but adopt the unit system in crediting pharmaceutical experience, as follows:

RECOMMENDATION No. 8.

That the practical experience prerequisite, in states which have no college of pharmacy graduation prerequisite, be credited at the rate of 60 units for a year's work consisting of not less than 2500 hours in a retail pharmacy, not less than two years of which being required of each candidate for pharmacist registration; that pharmaceutical experience acquired in the dispensary of a regularly chartered public hospital, or other institution, or the hospital corps of the U. S. Army or U. S. Navy, under supervision of a registered pharmacist, be recognized and credited as of equal value with retail drug store experience; that college of pharmacy instruction be credited at the rate of 5 units for each month thereof; and that Recommendation No. 7 be followed for the certification of all practical experience.

After the adoption of Chairman Walton's report, including the eight foregoing recommendations the Commitee was instructed to prepare and present a form of affidavit at next year's meeting, for use by the candidate for examination, in certifying proofs of experience, in accordance with Recommendation No. 7.

A resolution offered by Mr. Jarrett of Oklahoma, to define Class A Schools or Colleges of Pharmacy, or Departments of Pharmacy of Universities, was referred to the Committee on Standards.

President Gietner, in his address, made a survey of the work and accomplishments of the Association during the past year and pointed out some possibilities for the future. He commented on the success of the district meetings proposition and stated in connection therewith—"these district meetings afford an ample field for the generous and unselfish activities of our members," and that—"The same spirit which in previous years did so much to further our professional and Association welfare, will now find greater latitude for its activity in these district meetings, and the sum total of this activity will serve to push forward with increased strides the welfare and accomplishments of the Association as a whole."

President Gietner sounded a note of warning with reference to the consolidation plan which is already in operation in several states, and under which the various boards—pharmacy, medicine, dentistry, etc.—are grouped in one department, with a common head or director. The general feeling toward this consolidation plan seems to be one of active opposition, and while that is perhaps natural, President Gietner pointed out that such an attitude may not be the wisest one. In his words—"So long as this movement is on—glacier-like and irresistible—we should make the best of it... I believe we should continue loyal to pharmacy whether under the new order of things or the old, and stand ready to coöperate in making the best of any changes which may have to come. If convinced that the change must come, use your efforts toward eradicating particularly undesirable features, rather than continuing to fight a losing game, or withdrawing entirely. Your influence and advice might be instrumental in helping to modify the new plan into something very workable."

The Committee on President's Address, in presenting their report, which was adopted and the President's address accepted and referred for publication, voiced a further warning on the consolidation of boards, which is in part as follows:

"We as a Committee, are very decidedly opposed to the consolidation of the examining boards, as is now being practiced in five of our States. We feel this is the consensus of opinion of the Board members present. We believe the Pharmacy Boards through this plan will lose their identity and we can see no way in which this arrangement can place the work on a more efficient and economical basis."

The Report of the Executive Committee was prefaced by the following comment on the work of the Secretary's office:

"An inspection was made of the Secretary's office, including the book-keeping method, filing system, both as used in the regular routine work and vault space, also method of filing current drug journals and other periodicals, book cataloging system, mimeograph outfit and its operation, method of filing surplus mimeographed copies of laws, proceedings of minutes of the meetings, examination questions and answers, etc., also method of preserving for future use all original stencils written.

"Your Committee was highly pleased with the orderly and systematic arrangement of everything, as well as agreeably surprised as to the amount and scope of work handled by the office."

The Committee's recommendations follow:

"Your Committee would recommend that the Secetary attend some of the Board meetings of Rhode Island, New Jersey and New York in the near future, with the view of having them to join our ranks, also correspond with the Wyoming Board Members with suggestions that Wyoming obtain a law which would make her eligible to membership in the N. A. B. P.

"In view of the fact that all the Districts have been organized as planned by this Association and are now functioning, your Committee is of the opinion that there will be no necessity of having the President or Secretary attend all future meetings, and would recommend that the nearest Executive Officer be invited to attend such meetings.

"Your Committee recommends that in the future each District meeting be held, if possible, with one of its members during their State Pharmaceutical Convention.

"Upon motion made and carried, your Committee authorized the Secretary to notify State Boards of Pharmacy that the National Association is in position to defray the expenses of one delegate from a State to future District Meetings in cases where Boards have no available funds for such expenditures."

All of the foregoing were approved by the Committee on report of Executive Committee and both reports accepted and filed for publication.

Mr. H. C. Tindall, Chairman of the Legislative Committee, offered a most comprehensive report of legislation attempted and accomplished since the last convention. Reports were received and tabulated from forty state secretaries, showing that while there has been progressive legislation secured in a number of states, taken as a whole, the attempts made by some of the states to obtain prerequisite and other legislation did not meet with the desired success, owing to the mass of post-war reconstructive legislation coming up at the past term of the various legislatures. Most of those states failing to obtain desired legislation this year report that they expect to be successful at the next term of their legislatures.

The Secretary's Financial Report and the Treasurer's Report were both referred to the Executive Committee for audit and this Committee later reported that it had audited the reports and books of both the Secretary and the Treasurer and found them correct.

Mr. R. H. Walker of Gonzales, Texas, was given opportunity to explain orally the good features of a card index system he had evolved as the result of fourteen years' experience as Secretary of the Board of Pharmacy of his state, in keeping a record of examinations and registrations. Sample cards were shown and Mr. Walker expressed a willingness to give secretaries of other states the benefit of his experience and invited any one interested to write for detailed information.

A paper by Professor L. E. Sayre of Kansas on the subject "What the Kansas Board of Pharmacy Has Done for Pharmaceutical Education in Kansas" was read by Mr. Noll of that state, and received and referred for publication.

Mr. Walton of Pennsylvania read a resolution presented by the Pennsylvania Board of Pharmacy in which they recommended that the National Association of Boards of Pharmacy use all possible means to establish a uniform system of examinations and evaluation of the work offered by candidates before its Active Member boards, and toward this end, recommended that

the Association take upon itself the preparation of the question sheets and the affixing of rates which shall apply for correct answers to the respective questions and perfect products, etc.

This recommendation, at the suggestion of Mr. Walton, was referred to the Advisory Examination Committee.

Officers elected for the ensuing year are as follows:

President, L. L. Walton, Williamsport, Pa.; *Treasurer*, J. W. Gayle, Frankfort, Ky.; *Secretary*, H. C. Christensen, Chicago, Ill.

Vice Presidents: District No. 1, H. M. Lerou, Norwich, Connecticut (Me., N. H., Vt., Mass., R. I., Conn.). District No. 2, A. C. Taylor, Washington, D. C. (N. Y., N. J., Pa., Del., Md., D. C.). District No. 3, M. N. Ford, Columbus, Ohio (Ohio, Ky., Ind., Ill., Mich., Wis.). District No. 4, Charles Falkenhainer, Dubuque, Iowa (Minn., Iowa, N. D., S. D., Neb.). District No. 5, A. L. I. Winne, Richmond, Virginia (Tenn., N. C., S. C., Va., W. Va.). District No. 6, J. F. Tilford, Wichita, Kansas (Ark., Kas., Mo., Okla., Texas.). District No. 7, Ed. H. Walsdorf, New Orleans, La. (Ala., Ga., Fla., La., Miss.). District No. 8, F. E. Mortenson, Pueblo, Colorado (Colo., Utah, Ida., Mont., N. M., Wyo.). District No. 9, Joseph Piercy, Tonopah, Nevada (Ariz., Alaska, Calif., Nev., Ore., Wash.).

Executive Committee: John Culley, *Chairman*, Ogden, Utah; W. R. Jarrett, Oklahoma City, Okla.; W. P. Porterfield, Fargo, North Dakota.

N. A. B. P. Syllabus Committee: Charles S. Koon, Muskegon, Mich., term expires 1922. W. R. Montgomery, Butte, Mont., term expires 1923. O. W. Osterlund, Philadelphia, Pa., term expires 1924. Warren E. Scott, Oakdale, La., term expires 1925. George C. Diekman, New York, N. Y., term expires 1926. John Culley, Ogden, Utah, term expires 1927.

ADDRESS OF PRESIDENT SAMUEL L. HILTON, A. PH. A., 1921–1922.*

Mr. President, Fellow Members, Ladies and Gentlemen:

It was my privilege and pleasure just thirty years ago to attend my first meeting of the American Pharmaceutical Association, and it was here in the Crescent City I received this introduction.

I had expected to accompany my good friend, Mr. W. S. Thompson, so well known and highly respected, that I felt no hesitancy at an introduction in new and strange company. When the time arrived Mr. Thompson was ill, unable to attend the meeting, but I brought with me his report which I had taken down at his dictation. I was asked by officers and leaders to read this report; timidity, yes modesty, prevented, I wanted to be an observer and listener, I wanted to learn, and I can say that by the acquaintances and associates I made at that time I have been able to learn something, but nothing like what I should have. To-day it is different. I have lost much of that timidity and modesty, or I should not have recently become a benedict, or allowed myself to have become a candidate for this high office to which you have called me, for the reason that I know my shortcomings better than any of you.

The intimate friends I made here 30 years ago, Remington, Maisch, Trimble, Patch, Whelpley, Stevens, Good, and many others showed me a light, and that there was much more than what is usually found within the confines of four walls of the average retail drug store. A year ago when I was spoken of as one of the candidates for this high office, I felt that I did not possess the qualifications necessary, nor had I done anything, to my knowledge, worthy to receive such a high honor—the highest within the gift of American Pharmacy. While I appreciate the honor more than words can convey, I feel that by the action you have taken you will forbear my many shortcomings and inexperience, and at the same time render me every assistance and all the coöperation necessary, not only to advance the welfare of this Association, but to make the coming year the most prosperous one within its history.

This Association is very different from any other drug organization. It is not only a scientific organization but one that all, and every class, no matter what branch they may be interested in, can enjoy membership in, and one of its most valuable assets is its name—American Pharmaceutical Association.

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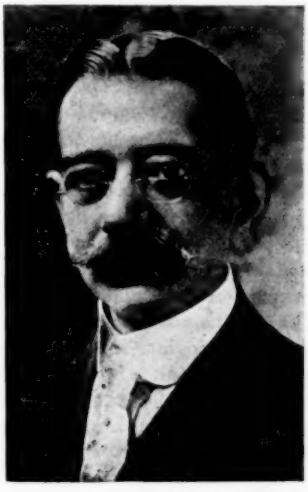
* Delivered following his installation as President of the American Pharmaceutical Association, at New Orleans, September 9, 1921.

Truly typical and in every way American, as much so as our great Republic.—Why not take advantage of this and make it more so? We cannot stand still, we must advance.—The Association has exercised an influence for good and the betterment of pharmacy in the past and will continue as long as it exists—but the day that it gives for American Pharmacy the evidence of unity, solidity, and the stability that would accompany a physical representation of itself, a permanent place where its affairs can be discussed, where the soundness of its policies can be determined, where the reason can be found and pressed for the things we have done and are going to do in the future, where we can come when we have business with public authority, under our own roof, with proper surroundings and facilities, to be able to consult and negotiate with those in authority, especially legislation,—for we believe by our 69 years of existence and the record we have made and are proud of, we can become recognized as we have never heretofore been recognized. Especially if facilities are offered, on a reasonable basis, to other national drug organizations, because there is strength in union and in the sanctity of home. It is said, and truly so, that a man is the best citizen when he has his own home.



This is also true, and I am sure you agree with me, a business house is a better part of the community and the business is more stable when it owns its own home. Transient conditions are eliminated. Fixed and stable conditions replace them. Business succeeds better when built upon a foundation of its own, on land that it owns and in buildings it has created. You know this, you know he succeeds better, he has a community responsibility, he becomes a permanent fixture. What is true of an individual, firm or corporation, large or small, is true also of an organization or an association.

Can you expect public authority, changing as it does from year to year, to constantly follow the theory and the sentiment and the protestation of unity and solidity, unless you give a physical expression to it? The American Pharmaceutical Association without such an expression will proceed to do its work, it will exercise as much influence in the future as in the past—but the day that it gives to American Pharmacy the evidence of unity, the solidity and the stability that would accompany a physical representation of itself, a permanent place where its offices are located, with its Journal office, laboratory, library, museum, and with sufficient room for offices for all other national organizations under our own roof, we will come into our own, advance the interests and welfare of American Pharmacy, and command the respect and recognition to which we are justly entitled.

When it plants itself in Washington, the seat of Government—as other organizations, representing less powerful organized forces have done—the American Pharmaceutical Association will bring the day when its counsel will be sought and its advice heeded, because it will there be evidenced by honesty and integrity of purpose and unity (the latter so much needed), and it will be heeded, because those are the characteristics which the public interests demand of any force or organization if that force shall be listened to and given adequate and just consideration.

It is my hope and dream that during my administration enough of you will join with me and make the start to acquire such a home as I have pictured. I am sure you will, I am sure enough of you can interest those connected with the allied branches of pharmacy to contribute to such a fund. With 4000 members a contribution of $25.00 each means $100,000. Certainly, we should be able to raise $250,000. I want you to take these few remarks to heart. I will do my part, yes more. I don't want you to let this great project slumber, but go in, complete and promote it to its fullest extent. Create that instrumentality that will be for your own good, for the future good of pharmacy and for the good of our Association, and at the same time for the betterment and proper protection of the people and the maintenance and continuation of the leadership of our Association. Will you join me?

My friends, I thank you.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* J. H. BEAL, CHARLES H. LAWALL, CASWELL A. MAYO, H. B. MASON, and the Editor-in-Chief of the JOURNAL, General Secretary-Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: C. HERBERT PACKARD, President, A. Ph. A.; WILBER J. TEETERS, President, A. C. P. F., H. C. CHRISTENSEN, Secretary, N. A. B. P.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; CHARLES H. LAWALL, Chairman, Council A. Ph. A. The Chairmen of the Sections, A. Ph. A.: A. G. DUMEZ, IVOR GRIFFITH, EDWARD SPEASE, ADAM WIRTH, CURT P. WIMMER and E. F. KELLY.

FINANCING A PERMANENT FIELD SECRETARY IN KANSAS.

Something new in the way of financing the office of a permanent field secretary was started at the recent meeting of the Kansas Pharmaceutical Association. The plan is an ambitious one and by means of it it is hoped to raise from ten to twenty thousand dollars annually for carrying on the work.

The idea revolves around an arbitrary standard called a "unit," and the aim is to sell not less than 500 units at $20 each. More than 500 if possible, of course. Indeed it is hoped that every druggist in the State—there are over 1100 of them—will buy at least one unit and that some of the larger concerns will subscribe for two, three, five or more.

The money thus raised will be used in part to pay the salary and expenses of a highly capable field secretary, who will devote his entire time to bringing about a betterment of conditions in the way of larger drug-store profits, more satisfactory laws and closer coöperation between the druggist and the state. It is the plan to have the field secretary work under the direction of the executive committee of the association and to be directly responsible to it.

While all details have not been worked out yet, the plan, as explained by the officers of the association, is essentially one for the general protection of drug interests. Representatives of the Kansas association are already taking subscriptions, and the outcome will be watched with interest.—Editorial in August *Bulletin of Pharmacy.*

CONTEMPLATING A HOME FOR THE PHARMACEUTICAL ASSOCIATION IN FRANCE.

Pharmaceutical associations throughout France are having their attention drawn to the desirability of acquiring a "Maison des Pharmaciens" as permanent quarters for the General Association. The idea is to form a sort of coöperative building society, with 100-fr. shares, and to erect a special building. —*Chemist & Druggist,* August 6.

THE SEXCENTENARY OF DANTE.

X. Rayser II, in *Chemist and Druggist,* May 14, '21, p. 47, writes: "The poet Dante, the sexcentenary of whose death will be celebrated in the summer of this year (the exact date of his death is disputed), cannot be claimed as a pharmacist, but he was a student of medicine (probably at Padua, so famous for its medical school), and a member of the Guild of Physicians and Apothecaries of Florence. One of his biographers thinks it necessary to apologize for this lapse on his part, and bids us not suppose he ever practiced as an apothecary; but, however this may be, he was well versed in all the science of his time, and must have had some special interest in medicine as a reason for joining that particular guild. We learn from his 'Convito' that his library contained seven volumes of Albertus Magnus, three of his pupil, St. Thomas Aquinas, and three of Avicenna, each of whom wrote largely of medicine among other things. That Dante thought very highly of the first two is clear, since he placed them both in Paradise among that

> 'Bright band in liveliness
> Surpassing . . . yet more sweet in voice
> Than in their visage beaming.'

Aquinas, who, in his 'Thesaurus Alchemia,' acknowledges Albertus as his master, he calls 'the angelic teacher,' and though he doubtless studied him most as a theologian, there is evidence in his 'Divine Comedy' of a general acquaintance with his teaching. There is, so far as I remember, no such reference in the poem referred to, as we often find in Keats, to his medical studies. It is noteworthy, how-

ever, that among the great spirits in Limbo he places

'Hippocrates,
Galenus, Avicen, and him who made
That commentary vast, Averroes.' "

SODIUM HYPOCHLORITE AS A HOUSEHOLD BLEACHING, DEODORIZING AND DISINFECTING AGENT.

The *Scientific American* of August 6, '21, states that sodium hypochlorite is becoming popular for purposes indicated in the title. The article concludes by stating that sodium hypochlorite was used in the war to keep wounds aseptic, and it may find a use for this purpose as a household aseptic. It is used in laundries, and is now being introduced for family use under many names, being easily identified by the peculiar and not disagreeable smell, which one soon learns to associate with cleanliness and purity. It is not a poisonous antiseptic like carbolic acid, corrosive sublimate and formaldehyde, unless it is mixed with large amounts of strong mineral acids, when chlorine is set free in such amounts as to be dangerous to breathe. Next to soap and washing soda, sodium hypochlorite may quite possibly become the most commonly used household cleansing reagent.

ALKALOIDS OF VALERIAN.

Waliscewski announced in 1891 that his investigation of valerian root indicated the presence of two alkaloids, one being soluble in ether, to which he gave the name chatinine; the other, which is less abundant and which is insoluble in ether, he called valerine. Goris and Vischniac (*Répert. de Pharm.*, June 6, 1921) extracted 5 kilos of an aqueous extract of valerian, representing 40 kilos of fresh root, with a 10% solution of sodium carbonate, treating the liquid with a mixture of ether and chloroform, then with water containing 2 percent of hydrochloric acid, finally saturating this solution with potassium carbonate and successfully extracting with ether and with chloroform. They succeeded in obtaining 4 Gm. of crude bases, from which they were able to separate 3 Gm. of chatinine and 1 Gm. of valerine. The former is difficult to obtain in a crystalline form, except as the picrate, which melts at 97° to 98°. Animal experiments showed that these two alkaloids have practically no physiological action; the therapeutic properties of valerian are therefore not due to these two bodies.—Through *Chemist & Druggist*, July 23, '21.

SULPHUR IN ALOPECIA.

Striking results are said to have been obtained in the treatment of alopecia and psoriasis after intramuscular injection of one or two cubic centimeters of a 5% oil solution of sulphur. The addition of cholesterin to the oil increases the absorbing powers. The formula used is: sulphur, 8 parts; cholesterinized oil, 80 parts; eucalyptol, 20 parts. The injections are repeated twice a week. The sulphur treatment acts on the papillae. Cod-liver oil is said to have special advantages in this formula. The proportion of cholesterin, however, is not stated.—Pautrier (*Presse Médicale*, Paris, May 18, 1921, through *Journ. Amer. Med. Assoc.*, July 2, 1921, 73).

PERSONAL AND NEWS ITEMS.

Treacy H. Duerfeldt.

WINNER OF THE FAIRCHILD SCHOLARSHIP, 1921.

Treacy H. Duerfeldt, to whom the Fairchild Scholarship for 1921 has been awarded, is a son of our fellow-member H. G. Duerfeldt of Spokane, Wash. Treacy H. Duerfeldt was born in Helena, Montana, June 2, 1901, and received his earlier education in Detroit, Mich., and in Spokane. He finished the grade school at the Holmes School of the latter city, and graduated from North Central High School, Spokane, in 1916, at the age of 17 years. In the fall of the same year he entered Washington State College at Pullman, where for two years he was enrolled for pre-medical studies, and had expected to enter the medical course, but, later, decided to take up the study of pharmacy. He matriculated in the School of Pharmacy of the same institution, September 16, 1920, completing his first year in pharmacy in 1921, with a record of grade "A," averaging upwards of 90 percent in all branches. We quote from a letter of Prof. P. H. Dirstine, Head of the School of Pharmacy of the State College of Washington, as follows:—"Treacy H. Duerfeldt has been an honor student all the time he has been at the State College of Washington, and is one of the best students that has ever attended the State College of Washington, in any course."

List of Registrants, Members of the American Pharmaceutical Association, and members of their families in attendance at the 69th Annual Convention, A. Ph. A., New Orleans meeting.

From list submitted by office of Local Secretary. Corrections and additions respectfully requested; please address the JOURNAL, 253 Bourse Building, Philadelphia, Pa.

A.

ADAMS, MR. AND MRS. WALTER D., Forney, Tex.
ADDISON, D. G., New Orleans, La.
AMES, FRED W., New Orleans, La.
ANDERSON, WILLIAM C., Brooklyn, N. Y.
APPLE, MARY E., St.Petersburg, Fla.
ARNY, H. V., New York City.
AUSTIN, EDGAR C., Cincinnati, Ohio.
AVERY, CHAS. H., Chicago, Ill.

B.

BAUER, MISS ELSIE, New York City.
BEAL, J. H., Urbana, Ill.
BERNER, MR. AND MRS. JOSEPH T., New Orleans, La.
BIBBINS, MR. AND MRS. F. E., Indianapolis, Ind.
BINGHAM, W. E., Gadsden, Ala.
BIRD, R. B., Winfield, Kas.
BLACK, James A., Baltimore, Md.
BLAKE, L. A., Auburn, Ala.
BLAKESLEE, L. G., St. Louis, Mo.
BOSIO, MR. AND MRS. ARTHUR, New Orleans, La.
BRADLEY, THEODORE J., Boston, Mass.
BROWN, LINWOOD A., Lexington, Ky.
BUCH, MRS. HENRY, New York City.
BUCH, Miss T., New York City.
BUCKNER, J. C., Galveston, Tex.

C.

CAPDAU, MISS V., New Orleans, La.
CAPDAU, H. E., New Orleans, La.
CASSADAY, BURTON, West Terra Haute, Ind.
CHRISTENSEN, MR. AND MRS. H. C., Chicago, Ill.
CHRISTENSEN, MISS ALTA H., Chicago, Ill.
CLARK, IRA B., Nashville, Tenn.
COLE, MISS B. OLIVE, Baltimore, Md.
COLLENS, J. W., Monroe, La.
COOK, E. FULLERTON, Philadelphia, Pa.
COOKE, LAWSON J., Goodland, Ind.
COOPER, ZADA M., Iowa City, Ia.
COULTER, GEORGE, Nashville, Tenn.
COX, W. J., Memphis, Tenn.
CROCKETT, W. G., Richmond, Va.
CULLEY, JOHN, Ogden, Utah.

D.

DAY, MR. AND MRS. WM. B., Chicago, Ill.
DEGLEY, MISS ADELAIDE M., Baltimore, Md.
DIEKMAN, GEORGE C., New York City.
DINER, JACOB, New York City.
DORSEY, EDWARD, Ottawa, Kas.
DU MEZ, A. G., Washington, D. C.

E.

EBERLE, E. G., Philadelphia, Pa.
EDDY, CLYDE L., New York City.
EICHOLD, BERNARD H., Mobile, Ala.
ELMER, AUGUST, New Orleans, La.
ELMER, O. B., New Orleans, La.
EMANUEL, MR. AND MRS. LOUIS, Pittsburgh, Pa.
ENGELHARDT, H., Baltimore, Md.

F.

FALKENHAINER, CHARLES, Dubuque, Ia.
FASER, H. M., University, Miss.
FEIN, MISS MARY A., Little Rock, Ark.
FISCHER, C. F., New York City.
FLACH, AUGUST, New Orleans, La.
FORD, M. N., Columbus, Ohio.
FREEBERG, FANNIE M., Moline, Ill.
FREERICKS, FRANK H., Cincinnati, Ohio.

G.

GAYLE, J. W., Frankfort, Ky.
GIDLEY, W. F., Lafayette, Ind.
GLOVER, MR. AND MRS. C. C., Ann Arbor, Mich.
GODBOLD, MR. AND MRS. F. C., New Orleans, La.
GODDING, JOHN G., Boston, Mass.
GRACE, R. F., New Orleans, La.
GRAY, MRS. M. M., Chicago, Ill.
GRAY, WILLIAM, Chicago, Ill.
GREYER, C. P., Morgantown, N. C.

H.

HALLUM, CHARLES M., Brownwood, Tex.
HARRIS, MR. AND MRS. S. G., Baltimore, Md.
HILDEBRAND, C. P., York, Neb.
HILTON, MR. AND MRS. S. L., Washington, D. C.
HOCKERT, B. E., Hartford, Conn.
HOPP, LEWIS C., Cleveland, Ohio.
HOSTMANN, MR. AND MRS. JEANNOT, New York City.

J.

JACOBS, ELLIOTT, New Orleans, La.
JAHN, MRS. J. E., New Orleans, La.
JARRETT, W. R., Oklahoma City, Okla.
JOHNSON, D. R., Norman, Okla.

K.

KAGY, E. S., Des Moines, Ia.
KEBLER, LYMAN F., Washington, D. C.
KELLY, E. F., Baltimore, Md.
KERR, MR. AND MRS. B. B., Murfreesboro, Tenn.
KOCH, JULIUS A., Pittsburgh, Pa.
KOCH, MISS FLORENCE, Pittsburgh, Pa.
KOON, MR. AND MRS. CHAS. S., Muskegon, Mich.

L.

LAWALL, CHARLES H., Philadelphia, Pa.
LEGENDRE, J. MARION, New Orleans, La.
LEGENDRE, J. A., New Orleans, La.
LEHMAN, MR AND MRS. R. H., New York City.
LEROU, H. M., Norwich, Conn.
LINDVALL, MR. AND MRS. GUS, Moline, Ill.
LINDVALL, BESSIE J., Moline, Ill.
LINDVALL, FREDERICK, Moline, Ill.
LIVINGSTON, MARGARET E., Baltimore, Md.
LYMAN, MR. AND MRS. R. A., Lincoln, Neb.

M.

MAYO, CASWELL A., Cincinnati, Ohio
MCDUFF, G. W., New Orleans, La.
MEISSNER, MR. AND MRS. F. W., LaPorte, Ind.
MONTGOMERY, W. R., Butte, Mont.
MORTENSON, FRANK E., Pueblo, Col.
MULDOON, HUGH C., Valparaiso, Ind.
MURRAY, E. L., Americus, Ga.

N.

NAYLOR, H. C., New Orleans, La.
NEWCOMB, E. L., Minneapolis, Minn.
NITARDY, F. W., New York City.
NOLL, MATHIAS, Atcheson, Kas.
NUCCIO, FRANK J., New Orleans, La.

P.

PACKARD, MR. AND MRS. C. H., Boston, Mass.
PITTENGER, PAUL S., Philadelphia, Pa.
POOL, MR. AND MRS. J. A., Redfield, So. Dak.
PORTERFIELD, W. P., Fargo, N. Dak.
POWELL, WILLIAM C., Snow Hill, Md.

R.

RUDD, W. F., Richmond, Va.
RUDDIMAN, MR. AND MRS. EDSEL A., St. Louis, Mo.
RUENZEL, HENRY G., Milwaukee, Wis.

S.

SCOVILLE, MR. AND MRS. WILBUR L., Detroit, Mich.
SCHAEFER, MR. AND MRS. HUGO H., New York City.
SCHERTZ, MR. AND MRS. CHRISTIAN, New Orleans, La.
SCHMIDT, MR. AND MRS. ADOLPH, McKeesport, Pa.
SHIPLETT, MR. AND MRS. B. O., Birmingham, Ala.
SNOW, MR. AND MRS. CLYDE M., Chicago, Ill.
SNYDER, J. P., Norwich, N. Y.
SPEASE, MR. AND MRS. EDWARD, Cleveland, Ohio.

T.

TEETERS, WILBER J., Iowa City, Ia.
THOMASON, W. P., Guntersville, Ala.
TINDALL, H. C., Excelsior Springs, Mo.

V.

VIEHOEVER, ARNO, Washington, D. C.

W.

WALKER, R. H., Gonzales, Tex.
WALDSDORF, MR. AND MRS. E. H., New Orleans, La.
WALTON, MR. AND MRS. L. L., Williamsport, Pa.
WAY, JAMES E., Jackson, Miss.
WHELPLEY, MR. AND MRS. H. M., St.Louis, Mo.
WHITE, W. R., Nashville, Tenn.
WHORTON, CARL, Gadsden, Ala.
WILSON, CHAS. E., Corinth, Miss.
WIMMER, CURT P., New York City.
WINNE, A. L. I., Richmond, Va.
WIRTH, ADAM, New Orleans, La.
WÖRNER, AUGUST, New Orleans, La.

Y.

YOUNGKEN, HEBER W., Philadelphia, Pa.

Z.

ZIEGLER, MR. AND MRS. W. H., Charleston, S. C.

THE PHARMACIST AND THE LAW.

RESPONSIBILITIES OF JOURNALISTS.

Those who write and sketch for newspapers have a responsibility in the moulding of public opinion. Sometimes, if not more frequently, they make use of their privilege and opportunity for ulterior purposes or, perhaps, cater to viewpoints of readers and occasionally there is a deliberate attempt to create class hatred; there is a degree of thoughtlessness, a desire to please certain patrons. The sincerity of some is questioned, others are persuaded to think they are mistreated and underpaid. Application of the same indictments would be resented by the writers, even though their title as good citizens might not compare favorably with those they attack. They are thoughtless, because there is a desire to please a certain class, and they know that those attacked will not do them injury.

About all the average citizen says about these items is, "that the papers must be filled with reading matter, will evoke merriment etc." Little thought is given to the fact that this is moulding public opinion, creating beliefs and viewpoints. Our purpose is to express disapproval of the articles in the press associating pharmacists with the liquor business very few of them want to have anything to do with alcoholic beverages, and only dispense on prescriptions because it is their duty. By the unthinking misrepresentations pharmacists and their profession are slandered; their service to the public is injured. We are not without a sense of humor, but can not see the joke in a sketch which depicts the one who dispenses medicine, whose character is a large asset, as a bootlegger on hold-up man. Perhaps written statements or misstatements are even worse for they are apt to make a more lasting impression. The point, however, is made that everyone, citizen and pharmacist, can help in bringing about a correction of these abuses in the press.

STOLEN ALCOHOLIC BEVERAGES.

A day never passes without the printing of an item of news in the press relating to stolen alcohol or alcoholic beverages. These thefts are not confined to licensed or unlicensed dealers, but as the following editorial in the *Philadelphia Ledger*, of August 3, indicates—thefts are made from storage rooms:

"Somewhere in the group of men who are appointed to enforce the Federal laws in this general neighborhood there must be some one with authority to answer questions, to initiate inquiries and to assume responsibility.

"That man, whoever he is, should be made to account for the shameful farce revealed in successive reports of thefts from the rooms in the Federal Building where seized whisky has been stored in large quantities.

"The locks are broken at intervals. The public is informed that on each occasion many thousands of dollars' worth of liquor has been stolen. Yet the storage rooms are supposed to be guarded. The corridors of the building are never in darkness. The elevators are closed and locked at given hours. Any one who took barrels of whisky or cases of stuff from the storage rooms would have to carry the loot down four flights of stairs in plain sight of dozens of Postoffice employes."

Alcohol and Liquors at wholesale T. D. 3208 amends regulation 60, and these can be obtained from the collectors. *N. W. D. A. Bulletin* No. 38 states that an innovation of much interest to the drug trade is the provision that wholesalers shall be permitted to sell alcohol only in original stamped packages, thus obviating the inconvenience of breaking statutory packages which has frequently resulted in loss through pilfering, evaporation, etc. In order to accommodate retailers who may desire to purchase less than a standard five-gallon package, the Bureau will authorize an original stamped package

holding one gallon. As all stamped packages are serially numbered, they can be easily recorded and traced from distillery to retailer and the wholesaler be thus relieved of the responsibility and annoyance of distributing alcohol in bulk which cannot be traced after it leaves his possession. The convenience and protection afforded by the new system of small statutory packages will, it is believed, much more than compensate for the slight increase in cost of containers. Doubtless in many cases retailers, to avoid this increase in cost, will purchase their alcohol in packages of five gallons or more. Under the new system jobbers will also avoid the necessity of qualifying and keeping records as retailers and employing pharmacists in order to sell alcohol in less than five-gallon lots.

BOOK NOTICES AND REVIEWS.

A Text Book of Organic Chemistry. By Joseph Scudder Chamberlain. P. Blakiston's Son & Co. $4.00 net. 959 pages. This work, as its title indicates, is a text book. It is designed to accompany a lecture course in theoretical organic chemistry. No feature is made of laboratory detail, except that in the appendix there is given a brief discussion of the separation, purification, identification, analysis of organic compounds, and determinations of molecular weights.

The book in its method and order of treatment, is an expression of the author's experience in teaching organic chemistry, and the presentation is such that there is no difficulty in gaining from the text a fundamental knowledge of the subject and the systematic relationships of the groups and individuals.

As a text book it is an admirable contribution, and as a book of reference it will be found of value to the worker in the field of organic chemistry, not because of the information imparted regarding experimental methods, but because it will enable him to refresh his memory on points of theory which are cropping up continually, and which the man in the practice of his profession cannot expect to carry continually in the fore part of his brain.

For example, the student may, without a moment's hesitation explain the difference between tautomerism and isomerism, between the enol form and the keto form, but as the years go by, after graduation, such meanings become dim unless he is engaged in work the nature of which constantly recalls their significance.

Professor Chamberlain's book features all of these points in such a way that each is given due prominence in the text, not being confused with subsidiary material, or itself obscurely subsidiary to other subjects.

There is a good index, and though the book comprises 959 pages, it is compact in its make-up. H. C. FULLER.

PUBLICATIONS RECEIVED.

Bericht von Schimmel & Co. (Inhaber: Karl u. Hermann Fritzsche) in Miltitz Bez. Leipzig *ueber aetherische Ole, Riechstoffe u.s.w.*, April 1921, pp. 156.

The legend on the Flueckiger medal reads: "Scientia non unius populi sed orbis terrarum." Even the world war could not obliterate this truth. It is fortunate for humanity indeed that, after the destruction of higher values—not to mention material losses and the infinitely more precious loss of life—scientific exchange is again being resumed. The Council of the A. Ph. A. has voted to send our Proceedings to pharmaceutical institutes abroad that cannot afford to pay for them at the present rate of exchange. In the "Bericht" we have a return contribution from a German firm which has done more than any scientific organization to make available to all the latest results of the researches on volatile oils and related subjects the world over. We are happy to receive because we have shown ourselves willing to give.

Since April 1913 the "Bericht" has been changed in form to make it correspond to Gildemeister's "Die aetherischen Öle" which it supplements. With the present year another change is being announced. The "Semi-annual Report" has been changed to an annual report which is to cover the calendar year.

Every phase of the subject is covered, from bibliography to structural chemistry. Special features of the latest "Bericht" are a review of Dorronsoro's "Estudio quimico de Esencias

naturales españolas" and "Entomologisches aus Miltitz 1920" by A. Reichert. Two colored plates add to the physical make-up: (1) Rosemary harvest in the island of Lesina, (Dalmatia); and (2) Distillation of linaloe oil in Chiautla (Mexico); both after water colors in the German Museum in Munich, donated by Schimmel & Co. to the Division of Perfumes. E. K.

NEW PUBLICATIONS.

Treatise on Chemistry. By H. E. Roscoe and C. Schorlemmer. Vol. 1. The Non-Metallic Elements. Price $9.00. Vol. II. The Metals. Price, $12.00. 5th edition, completely revised. 968 pp. Illustrated. The Macmillan Co., New York.

Chemical French. By Dolt. 2d edition, revised. 413 pp. Price, $4.00. The Chemical Publishing Co., Easton, Pa.

Dictionary of Chemical Solubilities Inorganic. By Arthur M. Comey and Dorothy A. Hahn. New edition, revised. Price, $14.00. The Macmillan Co., New York.

A Textbook of Organic Chemistry. By A. F. Holleman. 5th English ed., completely revised. 642 pp. 88 figs. Price, $3.50 net. John Wiley & Sons, Inc., New York.

Manufacture of Chemicals by Electrolysis. By Arthur H. Hale. 80 pp. Price, $2.00 net. D. Van Nostrand Co., New York.

Applied Colloid Chemistry: General Theory. By Wilder D. Bancroft. 345 pp. Illustrated. Price, $3.00. McGraw-Hill Book Co., Inc., New York.

The Atom. By Albert C. Crehore. 177 pp. Illustrated. Price, $2.00. D. Van Nostrand Co., New York.

How to Make and Use a Small Chemical Laboratory. By R. F. Yates. 102 pp. Illustrated. Price, $0.75. D. Van Nostrand Co., New York.

A Laboratory Course of Organic Chemistry. Including Qualitative Organic Analysis. By A. W. Titherley. 263 pp. Illustrated. Price, $2.50. D. Van Nostrand Co., New York.

Dictionary of Applied Chemistry. By Sir Edward Thorpe. New edition, revised and enlarged. Vol. I. A to Calcium. Price, $20.00 net. Longmans, Green and Co., New York.

A Textbook of Chemistry for University Students. By J. R. Partington. 1062 pp. Price, $8.00. The Macmillan Co., New York.

SECRETARY'S REPORT 1921 CONVENTION OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

BY H. C. CHRISTENSEN.

The work of the Secretary's office increases with disconcerting speed. Despite increased facilities, there rarely comes a time when we can say we have "caught up." This is due in part to the necessary field work which we may consider a very vital part of the Secretary's duties. In fact, I think it should have first consideration.

At the last meeting, you may recall we could give a report covering only eight months' work, owing to the fact that we met in May. This year we have absorbed that extra four months so that now our report must cover sixteen months instead of the conventional twelve.

The inauguration of the district plan under vice-presidents, each in charge of a district, has brought in a new phase of work which is very promising. It appears that these vice-presidents each covering his district, will do much to relieve the secretary's office of the detail connected with visiting various boards during examinations. It will leave him more time for educational work at state meetings, national meetings, etc., wherever the interests of the Association demand his presence.

With each succeeding year, new fields of opportunity for the work of the Association are discovered. We seem to be in a strategic position to aid in coördinating the work of the state boards, colleges and state associations, and to act in an advisory and directive capacity for legislative and educational movements.

Our organization, being free from local influences—particularly political influences—is in a position to view pharmacy in its entirety and to perceive what is beneficial to pharmacy as a whole, rather than what may be considered beneficial or advantageous by a single state or in a given locality. I think it is along these lines the Association may properly assume new activities.

During the year, we issued 1446 applications for reciprocity, a healthy increase in percent over the eight months reported at our last meeting. Out of this total of 1446 applications issued, 1138 reciprocal registrations have been reported to the Secretary's office by the various states. The difference between the number of blanks issued and the registrations listed, is accounted for by outstanding applications and registrations which have not been reported.

Other officers of the Association will dwell upon the district meetings, and I need say comparatively little, except to add that I believe it is the one outstanding advance that marks the year. The vice-presidents will always be in close contact with the boards in their districts. They will come to know the board members intimately. This close personal contact will lead to confidences, and the vice-presidents will soon know the exact status of each board, will learn what each member thinks about our work, wherein they may disagree, and what is the cause thereof. He will, having the confidence of the members, be in a position to advise in major and minor matters, to aid new board members in their work if such aid is asked or needed, and acting in an advisory capacity, be of assistance in keeping each board within the confines of the Association rules.

It must be very clear to all of you that as time passes we will attain a uniformity in the various states in examinations, in requirements for admission to examination, in education, in prerequisite requirements, and in legal and executive matters. This uniformity will come slowly. We cannot expect perfection in a day, but surely, even if slowly, we will reach the point where the coming pharmacist will know with certainty that the conditions and requirements for Idaho, let us say, are identical with those of Massachusetts. He will know that if he is registered in Illinois and there is an opening in Wisconsin, he can cross the state line and avail himself of the opportunities of that state without being harassed by state limitations.

This condition will not undermine state rights or usurp the prerogatives of any commonwealth. As a matter of fact, every state participating in the Association receives more benefits than it gives. This may seem paradoxical, but I believe it is capable of proof. You will readily perceive that we are accomplishing in fact what many of the professions have argued for in theory. We have, in effect, National Registration, without depriving any state of absolute control of its own affairs. No state need receive a man from another state unless it wishes to.

This is not the time or place to dwell upon the conditions of pharmacy as a whole. It may do no harm, to note in passing, however, that it appears to be the one business which has suffered the least from the slump of the past ten months. Pharmacy has been affected, of course, but not to the same extent as other lines. A competent clerk can still get a position with little decrease in wages from war-time salaries. The indications are that the schools of pharmacy will have capacity enrollment the coming year. While there seems to be an adequate supply of help, this is particularly true in the case of assistant pharmacists in states having this class of registrants. I am confident we are on the right track when we push higher the requirements for registered pharmacists, bringing the assistant requirements up to about what was formerly standard for full registered pharmacists. With the steadily increasing supply of assistants available, as higher standards for full registration become general we must sooner or later meet the proposition of providing reciprocity for assistants, at the same time establishing standards and requirements for assistant registration, to be generally adopted. That is something to be more seriously considered in the not far distant future.

The Association year which closed with Wednesday, August 31st, and which included sixteen months from May 1, 1920, was by far the Association's banner year, both from point of view of accomplishments and with reference to finances. Our total receipts for the year (sixteen months) were approximately $24,000.00 from all sources—application blanks, state board of pharmacy dues, members, Honorary Certificates, interest on Liberty bonds, savings account and checking account.

As will be shown by the detailed financial statements of the Secretary and Treasurer, while the disbursements for the past Association year have been higher than for any previous report period, this is accounted for by the fact that these reports cover an extraordinary period of sixteen months, during which time the expenditures of the Association have been greatly increased by the expense of district meetings and other activities. The benefits resulting from these meetings more than justify any increase in expenditures, and the proportionately larger income for the same period leaves the Association in a healthy condition financially.